When is trust produced and when does it matter? Taking a closer look at trust and alliance performance

Krishnan, R.

Publication date:
2006

Document Version
Publisher's PDF, also known as Version of record

When is Trust Produced and when does it Matter?
Taking a Closer Look at Trust and Alliance Performance

When is Trust Produced and when does it Matter?
Taking a Closer Look at Trust and Alliance Performance

Proefschrift

ter verkrijging van de graad van doctor aan de Universiteit van Tilburg, op gezag van de rector magnificus, prof.dr. F.A. van der Duyn Schouten, in het openbaar te verdedigen ten overstaan van een door het college voor promoties aangewezen commissie in de aula van de Universiteit op woensdag 1 maart 2006 om 16.15 uur door

Rekha Krishnan

geboren op 3 november 1977 te Calicut, Kerala, India

Promotor: Prof. dr. N.G. Noorderhaven

PREFACE

One of Sumantra Ghoshal's radical performance improvement commandments for managers struck a chord in the young wannabe inside me. I improvised the mantra to fit academia and promptly planted it on my white board in an earnest effort to internalize it. It read thus: there are those that live their lives by the law of averages and there are those that drive themselves forward inspired by the outliers. Somewhere in the middle of my Ph.D I opened my eyes to the fact that reality had trouble keeping up with my grand aspiration. After deep introspection, I realized that my naïve confidence led me into passionately focus on the outcome oblivious of the process. I was being carried away by scholarly talks at doctoral consortiums and was frustrated at not being able to practice what they preach. I still recall one of my conversations with Harry Barkema where he said, 'a crash course on cooking is not enough to make an excellent chef'. I understood that I needed patience in addition to passion. I began learning from my mistakes and turned my attention to the process of accumulating and internalizing knowledge and skill sets necessary to be a good researcher. I realized that once I took care of the process the outcome automatically took care of itself. I would describe my Ph.D as an exciting voyage through the scientific landscape, discovering new horizons along the way.

I am grateful to a number of people whose support and insights made this voyage possible. Niels Noorderhaven, my advisor, has been a wonderful human being. If it weren't for Niels I would not have embarked on a Ph.D. program. He has always been very approachable and kind. Niels' unflinching support during the unbelievably demanding data collection helped me survive a year of travails in India. I don't have words to describe the profound effect that Niels had on me during the formative stages of my Ph.D. Xavier Martin has been a significant influence in shaping my thoughts during the later stages of my Ph.D. We are fortunate to have him in Tilburg. Following his course and working with him exposed me to the rigors of research. I have benefited thoroughly from his insights during the course of my Ph.D. My unvarying urge to meet Xavier's high research standards not only pushed me beyond my limits but also brought out the best in me. Jean-Francois Hennart is one of the sharpest researchers I have met. His curiosity and passion for research has been a constant source of inspiration.

I gained from Andrew Inkpen's and Reinhard Bachman's insightful comments on various papers in my thesis. Their ideas on trust have influenced my research in more than one way. I thank Reinhard Bachman, Jean-Francois Hennart, Andrew Inkpen and Xavier Martin for serving in my dissertation committee.

My friends enriched my social environment making my time in Tilburg a memorable one. Alex has been one of my best friends ever. Alex has been a constant companion during the arduous data collection period in India. Looking back, the data collection could have been terrifying without him. Though I got to know Prea very late, our friendship grew quickly. A short breezy chat with Prea was enough to lift my spirits. Rejie has been a kind and considerate friend. Hanging out during the weekends with Rejie, Alex and Prea more than made up for the lonely existence during my Ph.D period. I wouldn't have survived my Ph.D without them.

Paulo has been my office mate for more than two years. I have enjoyed working with Paulo. He has challenged my ideas making me think out of the box. Paulo's optimism and zest for research kept the environment lively and his very own sense of humor kept it relaxing. Martyna, my flat mate and co-author, has been a great friend. I have learnt a lot from her during my stay in Tilburg. I admire her discipline not only with research but also otherwise. I have tried to emulate it without much success. Carla is a special friend and has been a source of encouragement. Her warmth and kindness helped me immensely. I still cherish the times Carla, Martyna and I spent together so engrossed in girl talk that we hardly noticed time fly by. Eric, Sjoerd, Oleg, Dorota, Anna, Arjen, Amar, Rian, Mario and llya enriched my social environment in Tilburg. I enjoyed teaching international management with Rian. I thank Mario for promptly mailing me the Dutch summary of my thesis. Irene and Roy were my only social ties outside of school. I am indebted to them for all they have done to make my stay in Tilburg a comfortable and memorable one.

My family has offered me tremendous support throughout my Ph.D. I dedicate this dissertation to my parents- to my Mom, who instilled in me the will to give all it takes to realize a well cherished dream; to my Dad, who taught me to aim high and introduced me to the fantastic world of literature and poetry. My brother and best friend Rajiv, who has just begun his journey as a Ph.D student, believes I am capable of attaining the highest of laurels. Nobody is more

disappointed than him with his super sister not finishing her Ph.D with 5 A journal publications. My in laws highly value education and research and that means a lot to me. Special thanks goes to my husband and soul mate Srini, who being in the final stages of his Ph.D himself, empathized in every possible way with my excitements, frustrations and dreams associated with pursuing a Ph.D. He is the best thing that happened to me.

Rekha Krishnan

TABLE OF CONTENTS

CHAPTER 1: INTRODUCTION

1.1. SEQUENCE AND CONTENT 2
1.2. LINKS BETWEEN PAPERS 4

CHAPTER 2: DETERMINANTS OF STRATEGIC ALLIANCE PERFORMANCE: A META-ANALYSIS

2.1. THEORY AND HYPOTHESES 8
2.1.1. Initial Conditions 10
2.1.2. Governance Structure 14
2.1.3. Post-Formation Dynamics 17
2.2. METHODS 18
2.2.1. Sample 18
2.2.2. Meta-Analytic Procedure 20
2.3. RESULTS 23
2.3.1. Meta-Analysis 23
2.3.2. Moderator Analysis 25
2.3.3. Multivariate Analysis of the Determinants of Alliance Performance 27
2.4. DISCUSSION 30
2.4.1. Initial Conditions 32
2.4.2. Governance Structure 33
2.4.3. Post-Formation Dynamics 34

CHAPTER 3: WHEN DOES INTERORGANIZATIONAL TRUST MATTER TO STRATEGIC ALLIANCE PERFORMANCE?

3.1. TRUST AND ALLIANCE PERFORMANCE 39
3.1.1. Trust, Behavioral Uncertainty Concerns and Alliance Performance 40
3.1.2. Trust, Environmental Uncertainty and Alliance Performance 44
3.2. METHODS 47
3.2.1. Data 47
3.2.2. Data Collection 47
3.2.3. Dependent Variable 49
3.2.4. Independent Variables 50
3.2.5. Control Variables 52
3.2.6. Analysis 54
3.3. RESULTS 54
3.3.1. Reliability and Validity 54
3.3.2. Tests of Hypotheses 55
3.4. DISCUSSION 63
3.4.1. Contributions and Implications 64
3.4.2. Limitations and Suggestions for Future Research 66
3.4.3. Conclusion 68

CHAPTER 4: THE ROLE OF FORMAL AND INFORMAL ALLIANCE CHARACTERISTICS IN THE CULTIVATION OF DIFFERENT TYPES OF INTERORGANZIATIONAL TRUST

4.1. THEORY AND HYPOTHESES 70
4.1.1. Interorganizational Trust 70
4.1.2. Governance Structure and Fragile Trust 71
4.1.3. Quality of Information Exchanged and Resilient Trust 72
4.1.4. Moderating Effects of Behavioral Uncertainty 73
4.1.5. Moderating Effects of Environmental Uncertainty 77
4.2. METHODS 78
4.2.1. Data and Data Collection 78
4.2.3. Dependent Variables 78
4.2.4. Independent Variables 79
4.2.5. Control Variables 79
4.2.6. Analysis 80
4.3. RESULTS 80
4.3.1. Reliability and Validity 80
4.3.2. Tests of Hypotheses 81
4.4. DISCUSSION AND CONCLUSION 85
4.4.1. Contributions and Implications 86
4.4.2. Limitations and Suggestions for Future Research 87

CHAPTER 5: TRUST REPAIR: TAKING IT TO THE NEXT LEVEL

5.1. TRUST 90
5.1.1. Benefits and Costs of Building Trust 90
5.1.2. Defining Interorganizational Trust and its Levels 92
5.1.3. Strategic-level Trust 93
5.1.4. Operational-level Trust 94
5.2. VIOLATIONS OF TRUST: DEFINITION AND TYPES 94
5.3. TYPES OF REMEDIES 96
5.4. DISCUSSION AND CONCLUSIONS 105

CHAPTER 6: OVERALL CONCLUSIONS

6.1. FINDINGS AND IMPLICATIONS 110
6.2. SUGGESTIONS FOR FURTHER RESEARCH 112
6.3. CONCLUDING REMARKS 114

APPENDICES 115

SAMENVATTING: DUTCH SUMMARY 117

REFERENCES 121

CHAPTER 1

INTRODUCTION

The past two decades have witnessed a dramatic rise in the use by business firms of alliances of various kinds (Hagedoorn, 1995; Hergert & Morris, 1988; Inkpen, 2001), and, with a time lapse, an increase in the attention paid to this phenomenon by researchers (Child & Faulkner, 1998; Contractor & Lorange, 1988; Harrigan, 1988; Kogut, 1988; Osborn & Hagedoorn, 1997; Yan & Luo, 2001). Strategic alliances can be defined as any extended cooperative agreement intended at the joint development, manufacture, and/or distribution of products (Gulati, 1998; Zollo, Reuer & Singh, 2002: 701). Owing to the complexities inherent in strategic alliances, extant research suggests that managing and consciously investing in behavioral aspects, such as trust, becomes equally germane to success as choosing the right partner and structuring these strategic alliances (Park & Ungson, 2001). Although extant research has identified interorganizational trust as a key factor contributing to alliance success, it is not clear from prior research (1) when investing in inter-organizational trust pays off, (2) when such an important relational asset is cultivated, (3) what are the efficient ways of restoring trust given that trust violation is not uncommon.

In this dissertation, I address each of these vexing issues. The result is four papers that take stock of and refine existing research on strategic alliance performance and its relation to interorganizational trust, and examine ways of cultivating and restoring inter-organizational trust. Specifically, using a meta-analysis of 78 empirical studies the first paper synthesizes existing findings on alliance performance and unravels novel relationships that remained unexamined thus far due to data limitations. The second and third papers take advantage of a unique survey sample of 126 strategic alliances between Indian firms and their foreign partners to examine when trust matters to alliance performance and when it is cultivated. The fourth paper theoretically examines the repair of trust in an interorganizational context at two distinct levels of analysis-strategic and operational.

1.1. SEQUENCE AND CONTENT

The first paper of the dissertation provides a meta-analysis of the determinants of strategic alliance performance using data from 78 empirical studies involving 15,201 alliances in response to the prevalence of diverse theoretical perspectives and inconsistent empirical findings. Meta-analysis is a statistical technique for aggregating results across multiple empirical studies while correcting for potential sources of variation in study findings, such as sampling error and measurement error. Specifically, the first paper has three objectives: (a) to identify among the wide range of determinants of alliance performance investigated in prior research those factors that effectively increase and decrease alliance performance and estimate with precision the magnitude of their effects, (b) to evaluate the generalizability of these effects across different empirical contexts and distinct operationalizations of alliance performance, and (c) to estimate the joint effect of initial conditions, governance structure and partner behavior on alliance performance by developing and testing an overall conceptual framework that includes those factors that have been most frequently related to alliance performance.

The second paper examines the contingent effect of interorganizational trust on strategic alliance performance by examining how uncertainty moderates the trust-performance relationship. The theory builds on the distinction between behavioral uncertainty, which relates to the potential actions of the partners in the alliance relationship, and environmental uncertainty, which results from causes external to the alliance. The paper argues that whereas trust matters more to alliance performance in the presence of behavioral uncertainty (due to interdependence between partners and inter-partner competition), it matters less to alliance performance in the presence of environmental uncertainty (due to environmental instability and unpredictability). The analysis is based on a survey of 126 international alliances between Indian firms and their foreign partners. I relied on survey methodology for this study because of the constrains associated with obtaining objective data on focal independent (interorganizational trust) and dependent (alliance performance) constructs in my study. Survey and the interviews conducted during pretests provided a richer data on these constructs and a better understanding of the phenomenon.

The third paper relates the formal (equity alliance) and informal (quality of information exchanged) determinants to two distinct forms of trust, fragile and resilient trust respectively, and examines the conditions under which the formal and informal determinants facilitate or hamper the cultivation of the two distinct types of inter-organizational trust. This study argues that equity alliance facilitate the cultivation of fragile trust under behavioral uncertainty and hinders its cultivation under environmental uncertainty whereas the quality of information exchanged between partners facilitates the cultivation of resilient trust under both behavioral and environmental uncertainty. The analysis, due to the same reasons indicated for the second paper of the dissertation, is based on a survey of 126 international alliances between Indian firms and foreign companies from 21 countries.

The fourth paper assumes a more longitudinal perspective, taking into account that interorganizational trust can be built, broken, and repaired again. The paper analyzes the issue of trust repair in an interorganizational context by identifying two distinct levels of analysis – strategic and operational – distinguished according to the different roles that incumbents of various positions in organizational hierarchy have in the functioning of their organizations and thus also the alliance. We argue that that violations of trust at the strategic level are likely to be related to the perceived value incongruity between the partners, while at the operational they are likely to have task reliability as its primary object. Consequently, we posit that the appropriate remedies for mending strategic-level trust violations are non-legalistic in nature and their effectiveness would depend on the extent to which the trust violator can prove his innocence to the trustee. Repair of operational-level trust violations in contrast could be accomplished both by means of legalistic as well as non-legalistic remedies, depending on the frequency with which the violation occurs. Finally, we argue that because the repair of operational-level trust violations by means of legalistic remedies must be initiated at the strategic level, the degree of vertical coordination and control in the organization would affect the speed with which introduction of such measures would be undertaken and accomplished.

1.2. LINKS BETWEEN PAPERS

Each of the four papers in the dissertation apart from contributing separately to extant research reinforce and relate to each other in several ways. The first paper cumulates 78 empirical studies to establish a quantitative synthesis of the influence of initial conditions, governance structure and post-formation dynamics on alliance performance. One of the intriguing findings of the meta-analysis sets the stage for the second study. The results of the meta-analysis indicate that interorganizational trust is the strongest determinant of alliance performance. However, we also found that the effect of trust on alliance performance, despite being frequently studied has produced mixed results. Moderator analyses indicated that this result is heterogeneous and found no consistent pattern of moderators that accounted for this heterogeneity. Given the centrality of trust as a determinant of alliance performance, this raised the question of what theoretically relevant moderators do indeed condition the trust-alliance performance relationship. Because research specifying the boundary conditions of the relationship between trust and alliance performance so far has been limited, the answer to this question has remained vague. As alliance partners not only face the uncertainty pertaining to their environment but also uncertainty surrounding partner behavior the purpose of the second paper was to understand whether the type of uncertainty conditions the relationship between trust and alliance performance.

The existence of trust between alliance partners cannot be taken for granted, however; partners in a relationship might have to consciously cultivate and mutually own this intangible relational asset (Parkhe, 1998; Sako, 1991) Hence, while the second paper takes trust as a given, focusing on its effects, the third paper examines the formal and informal factors that enable the cultivation of inter-organizational trust. Because partners might incur substantial real and opportunity costs in cultivating trust (McEvily et al., 2003; Poppo & Zenger, 2002), it is important to understand the conditions in which these formal and informal mechanisms do indeed improve trust. Hence, the third paper reveals the type of trust produced by formal and informal alliance characteristics and the conditions under which the formal and informal mechanisms facilitate or hinder the cultivation of interorganizational trust. This allows alliance partners to invest in the right mechanisms of trust cultivation under the right conditions.

While the third paper enhances our understanding of the ways of fostering trust in interorganizational relationships, the fourth paper adds to the few existing studies on the issue of preserving and repairing trust (e.g., Sitkin & Roth, 1993; Shapiro, 1987). Given the costs involved in fostering trust, it is important to understand ways of repairing it in case of a breach. Hence, in the fourth paper we identify trust repair measures appropriate for dealing with breaches of trust at the strategic and operational levels. All in all, the four papers that comprise my dissertation add to our understanding of interorganizational trust and its impact on alliance performance.

CHAPTER 2[1]

DETERMINANTS OF STRATEGIC ALLIANCE PERFORMANCE: A META-ANALYSIS

Strategic alliances have emerged over the past two decades as a prevalent mode of corporate development. They have also become a topic of central interest to organizational and strategy scholars, who have investigated the antecedents of alliance formation, the choice of governance structure, and how these initial conditions and subsequent partner behaviors influence alliance performance. Despite continued scholarly effort, Gulati (1998) concluded in a review of the literature that understanding the determinants of alliance performance "remains one of the most interesting and also one of the most vexing questions" in the study of strategic alliances (p. 309). Indeed, prior empirical research on alliance performance has adopted a variety of theoretical perspectives, which have not often been integrated. The emphasis on the development and testing of new theory rather than on empirical generalization has led to over 100 distinct variables being investigated as antecedents of alliance performance. Also, prior studies have produced inconsistent findings with respect to the relative contribution, magnitude, statistical significance, and direction of the determinants of alliance performance. To date, these findings have not been systematically combined to establish the generalizability of the relationships between alliance performance and its antecedents. Thus, although a large volume of empirical research has been conducted on the subject, no clear consensus exists regarding what factors influence alliance performance.

Given the prevalence of diverse theoretical perspectives and the inconsistency of empirical findings, the purpose of this study is to provide a meta-analysis of the determinants of strategic alliance performance using data from 78 empirical studies involving 15,201 alliances. Meta-analysis is a statistical technique for aggregating results across multiple empirical studies while correcting for potential sources of variation in study findings, such as sampling error and measurement error. Specifically, the present research has three objectives: (a) to identify among

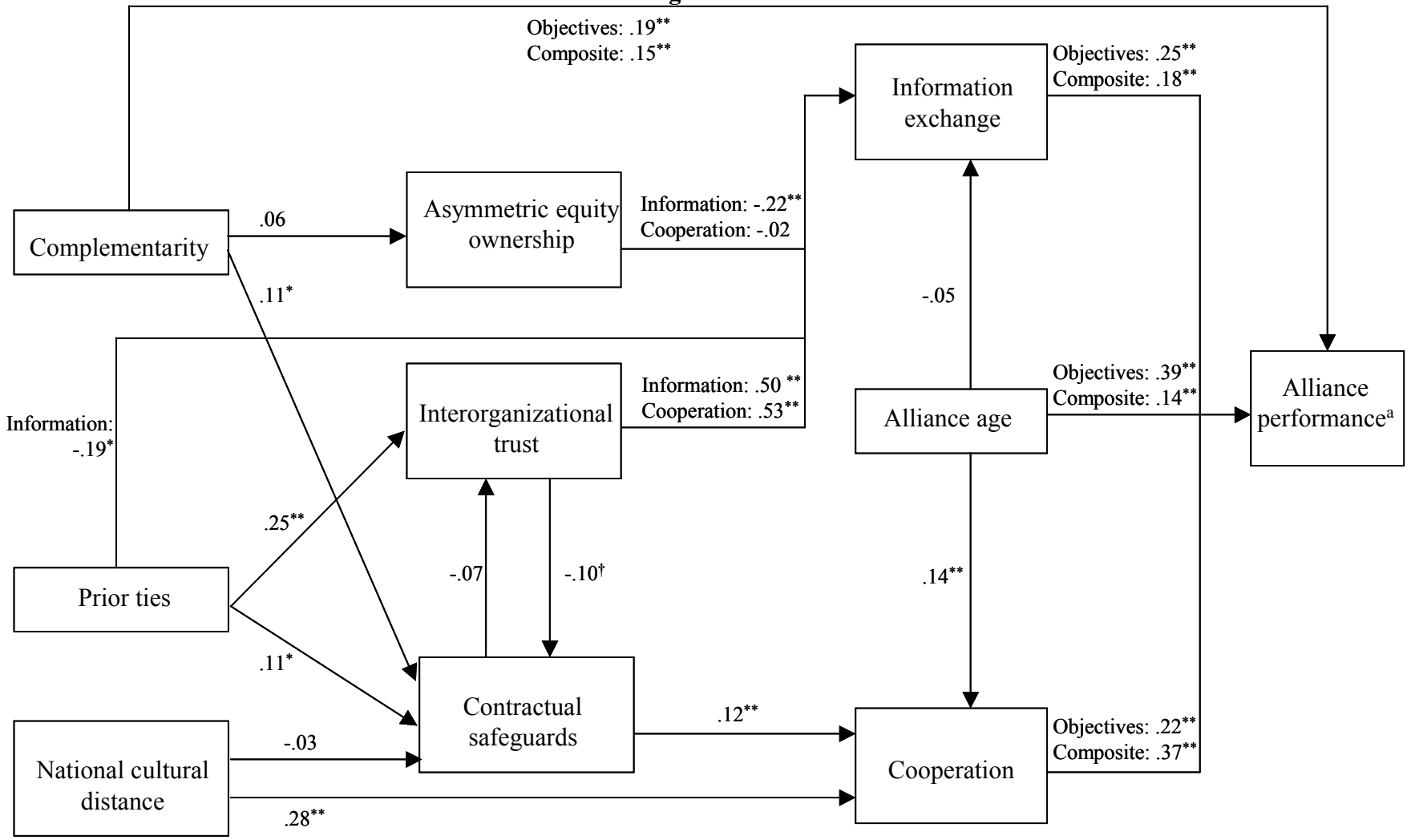
[1] This paper is the result of joint work with Paulo Cunha

a wide range of determinants of alliance performance investigated in prior research those factors that effectively increase and decrease alliance performance and estimate with precision the magnitude of their effects, (b) to evaluate the generalizability of these effects across different empirical contexts and distinct operationalizations of alliance performance, and (c) to estimate the joint effect of initial conditions, governance structure and partner behavior on alliance performance by developing and testing an overall conceptual framework that includes those factors that have been most frequently related to alliance performance. By cumulating empirical evidence across a wide range of empirical studies we are able to establish firm empirical generalizations on the determinants of strategic alliance performance.

2.1. THEORY AND HYPOTHESES

The performance of strategic alliances has been investigated from a variety of theoretical perspectives (Kogut, 1988; Reuer, 2004), including resource-based theory (e.g., Steensma & Corley, 2000), transaction cost economics (e.g., Weiss & Kurland, 1997; Luo, 2002), strategic behavior (e.g., Luo, 1997; Park & Russo, 1996), game theory (e.g., Parkhe, 1993b; Heide & Miner, 1992) and organizational learning (e.g., Steensma & Lyles, 2000; Lane, Salk & Lyles, 2001). These diverse perspectives have each emphasized the role of distinct types of factors in influencing alliance performance. Collectively, prior research has shown that alliance performance is jointly determined by (a) the conditions present at the inception of the alliance (e.g., Luo, 2002), (b) the type of governance structure used in the alliance (e.g., Zollo, Reuer & Singh, 2002), and (c) the post-formation cooperative dynamics between the alliance partners (e.g., Luo, 2001; Aulakh, Kotabe & Sahay, 1996). However, prior studies have been generally informed by a single theoretical perspective and as a result the different factors have not often been empirically investigated simultaneously within an individual study. The model presented in Figure 1 draws on these diverse streams of research to examine the structural and behavioral determinants of alliance performance. To obtain robust meta-analytic estimates the conceptual model focuses on those factors that have been most frequently investigated in prior research.

FIGURE 1
Determinants of Strategic Alliance Performance



2.1.1. Initial Conditions

Resource complementarity. Resource complementarity exists in strategic alliances when strategic and organizational resources contributed by partners are complementary. In such alliances, which Hennart (1988) refers to as link alliances, the type of knowledge that each partner contributes to the alliance is different. Indeed, research adopting a transaction cost perspective has shown that alliances are formed when access to the relevant resources cannot be obtained through market transactions and when the relevant resources are coupled by undesired assets and cannot be acquired separately (e.g., Hennart, 1991; Hennart & Reddy, 2000). The combination of resources owned by different firms is, therefore, the primary motive driving alliance formation and has a central influence on partner selection. For instance, Ireland, Hitt & Vaidyanath (2002) have shown that when forming international alliances firms seek partners that possess complementary resources and capabilities.

Alliances may create value by combining similar resources, capabilities or activities to achieve economies of scale and share risks, or by pooling complementary resources, capabilities or activities to achieve economies of scope (Hennart, 1988). The combination of complementary resources may also increase the competitive position of the alliance by creating a distinctive bundle of resources and activities that is valuable, rare, and difficult to imitate or substitute (Dyer & Singh, 1998). Hence,

> *Hypothesis 1. The level of resource complementarity between the alliance partners will be positively related to alliance performance.*

The nature of the resources combined in a strategic alliance may also have an indirect effect on alliance performance by influencing the choice of governance structure. The combination of complementary resources and activities requires considerable coordination between the alliance partners arising from the ongoing mutual adjustments needed to couple distinct resources and activities into an integrated process of value creation and thus realize the potential synergies from the alliance. Thus, the interdependence associated with resource complementarity may entail higher *coordination costs* in managing the alliance (Gulati & Singh, 1998).

Resource complementarity may create also a situation of cooperative co-specialization in which alliances are vehicles for exchanging access to idiosyncratic resources and capabilities owned by the alliance partners rather than for the voluntary or involuntary transfer of capabilities. Indeed, in a study of technological alliances Mowery et al. (1996) found that most alliances led to the cooperative co-specialization between the alliance partners in terms of their technological capabilities, and that in only 24 percent of alliances did the partners' technological capabilities become similar over time. However, mutual interdependence between the alliance partners stemming from cooperative co-specialization may become asymmetrical dependence if one of the partners opportunistically internalizes the other partner's knowledge or capabilities (Zeng & Hennart, 2002). As a result, resource complementarity may also be associated with high *appropriation concerns* (Gulati & Singh, 1998; Zeng & Hennart, 2002). The anticipated coordination costs and appropriation concerns associated with alliances where partners pool complementary resources are, therefore, likely to lead to the development of more complex contracts in an attempt to reduce opportunism by establishing safeguards and rules for responding to a wide range of contingencies (Parkhe, 1993b). Hence,

> *Hypothesis 2. The level of resource complementarity between alliance partners will be positively related to the level of contractual safeguards embedded in the strategic alliance.*

In equity alliances resource complementarity is also likely to influence the equity distribution between the alliance partners. Because the resources of all the alliance partners are required for value creation, bargaining power is likely to be equally distributed (Yan & Gray, 1994). This symmetry in bargaining power is, in turn, likely to lead to a symmetrical equity distribution. Thus,

> *Hypothesis 3. The level of resource complementarity between alliance partners will be positively related to a symmetric (shared) equity distribution in the strategic alliance.*

By linking resource complementarity to symmetric equity distribution, we assume that the contributions of the partners are of equal size. Even though the partners' contribution towards the

alliance is complementary, it need not be of the same size or of equal importance. A firm that possesses technological competence inferior to that of its partner is likely be asymmetrically dependent on its partner (Hennart & Zeng, 2005). This suggests that partners are likely to rely on an asymmetric equity distribution.

> Hypothesis 3b. *The level of resource complementarity between the alliance partners will be positively related to an asymmetric (unequal) equity distribution in the strategic alliance.*

Prior alliances. Strategic alliances are not always discrete and independent events. Indeed, on many occasions firms engage in multiple sequential alliances over time whereby a particular alliance may be preceded by a history of cooperation between the alliance partners (e.g., Gulati, 1995). The accumulation of partner-specific experience through repeated alliances may in turn influence alliance performance in several ways. First, the accumulation of cooperative experience at the dyadic level, allows the partnering firms to increase their knowledge of each other's organizational processes, resources and capabilities and develop partner-specific routines regarding information exchange, conflict resolution and cooperation (Zollo, Reuer, & Singh, 2002). The presence of these routines at the inception of the alliance is likely to have a positive effect on the post-formation interaction between the alliance partners and facilitate information exchange. Prior research also suggests that repeated alliance formation between the partnering firms is also likely to be accompanied by the development of mutual trust (Gulati, 1995). Hence,

> *Hypothesis 4. The presence of prior alliances between the partnering firms will be positively related to the level of information exchange in the strategic alliance.*

> *Hypothesis 5. The presence of prior alliances between the partnering firms will be positively related to the level of trust in the strategic alliance.*

Besides influencing the post-formation dynamics between the alliance partners, the history of prior cooperation between the partnering firms may also impact alliance performance by influencing transactions costs. The initial level of trust stemming from prior alliances and the

accumulated experience of cooperation may, at the stage of alliance formation, reduce fears of opportunism and create an expectation of predictability regarding each other's behavior (Gulati, 1995). Because the development of complex contracts that stabilize partners' responses to multiple contingencies is costly and may decrease the flexibility of the alliance, the presence of trust may reduce the partners' reliance on contractual safeguards, and increase their reliance on trust as a mechanism for ensuring predictability and reducing opportunism and decrease transaction costs (Parkhe, 1993b).

> *Hypothesis 6. The presence of prior alliances between the partnering firms will be negatively related to the level of contractual safeguards embedded in the strategic alliance.*

National cultural distance. National cultural distance between the alliance partners captures the extent to which the shared societal values and norms differ between the countries of the partnering firms. High levels of national cultural distance are likely to be reflected in differences in the partners' management systems and relational behaviors (e.g., Kogut & Singh, 1988; Schuler & Rogovsky, 1998). These differences may in turn lead to conflicts and misunderstanding between the partnering firms, increase coordination costs, and create barriers to communication and knowledge transfer (e.g., Lyles & Salk, 1996). Such barriers tend to be detrimental to cooperation- the extent to which partners engage in mutual consultation regarding decision making and cooperate in implementing and establishing rules in strategic and functional domains (Luo, 2002). Hence,

> *Hypothesis 7. The level of national cultural distance between the partnering firms will be negatively related to the level of cooperation in the strategic alliance.*

National cultural distance may also impact transaction costs by influencing the governance structure of the alliance (e.g., Hennart & Reddy, 2000). Indeed, firms may attempt to counteract the potential conflicts arising from cultural distance by establishing a more extensive set of contractual safeguards. Thus,

Hypothesis 8. The level of national cultural distance between the partnering firms will be positively related to the level of contractual safeguards embedded in the strategic alliance.

2.1.2. Governance Structure

Research on strategic alliances has emphasized the importance of governance structure as a central determinant of alliance performance (e.g., Poppo & Zenger, 2002). The choice of governance structure is important because it provides a framework of rules and incentives within which cooperation between the partnering firms unfolds and thus on the partners' ability to realize the potential value from pooling complementary resources.

Prior research on the choice of governance structure and its performance implications for strategic alliances has been primarily based on transaction cost theory (e.g., Hennart, 1988). The core proposition of this theory is that alliance performance is determined by the extent to which the partnering firms align the properties of the governance structure with the attributes of the underlying transaction in a way that maximizes the partners' joint incentive to cooperate and minimizes transaction costs (Hennart, 1988). Contractual safeguards and equity distribution constitute two important parameters in the design of governance structures that can be used to create joint incentives and curb opportunism.

Contractual safeguards. Contractual safeguards may create joint incentives for cooperation and limit opportunism in several ways. First, by establishing more complex contracts that specify partners' responses to multiple contingencies and establish rules and procedures for dispute resolution and for responding to unanticipated outcomes, partnering firms may increase the predictability of each other's behavior and restrict the range of circumstances in which opportunism might occur (Poppo & Zenger, 2002). Second, contracts may reduce opportunism by specifying a payoff structure that rewards mutual cooperation and increases the costs arising from unilateral or mutual defection (Lui & Ngo, 2004; Parkhe, 1993b). The cooperation that contractual safeguards bring about is achieved through the fear of sanctions or loss rather than through open commitment of partners (Rousseau et al, 1998). Hence, contractual safeguards function as a deterrence mechanism in bringing about cooperation between partners.

Hypothesis 9. The level of contractual safeguards embedded in the strategic alliance will be positively related to the level of cooperation in the strategic alliance.

Equity distribution. In equity alliances the distribution of equity ownership between the alliance partners provides a powerful mechanism for maximizing the partnering firms' incentive to cooperate. Equity alliances align joint incentives by rewarding the partnering firms with a share of the residual profits of the alliance, rather than by specifying in an ex-ante contract the partners' contribution and the profit distribution (Hennart & Zeng, 2005). Thus, they are particularly valuable under conditions in which it is difficult to evaluate a priori what is being exchanged, such as when partners are transferring tacit knowledge (Hennart, 1988). Equity alliances are also be efficient in unstable and uncertain environments where changes in the alliance may be required to ensure adaptation but the direction of these changes in unknown (Hennart, 1988). In these conditions, repeated modifications and renegotiation of the alliance contract to respond to environmental changes could prove costly and slow. In the context of equity alliances an important factor is the distribution of equity ownership between the alliance partners. Strategic alliances where both partners have an equal share of the ownership provide both partners with an equal claim on the alliance profits. Thus, by providing the maximum joint incentive for cooperation shared equity alliances should have a positive effect on the post-formation interaction between the partners. Thus,

Hypothesis 10a-b. Shared equity distribution between the partnering firms will be positively related to (a) the level of information exchange and (b) the level of cooperation in the strategic alliance.

Interorganizational trust. Prior research suggests that interorganizational trust may also operate as an important governance mechanism in strategic alliances (e.g., Poppo and Zenger, 2002; Zaheer, McEvily, and Perrone, 1998). Interorganizational trust reflects the bilateral expectation that the alliance partner's behaviors will be predicable, consistent with initial commitments and non-opportunistic (Zaheer et al., 1998). Trust may play multiple roles in governing the combination of resources and activities in the alliance (Zaheer et al., 1998). First, because the presence of mutual trust is associated with low expectation of opportunism it is likely to be

accompanied by lower monitoring activities and facilitates negotiations. This in turn should reduce transaction and monitoring costs, and increase the alliance's adaptiveness to changing environments. Second, the expectations that the partner is both willing and able to fulfill its commitments and will refrain from acting opportunistically should promote information exchange and increase mutual cooperation in the alliance (Lane, Salk, & Lyles, 2001). Hence,

Hypothesis 11a-b. The level of interorganizational trust between the partnering firms will be positively related to (a) the level of information exchange and (b) the level of cooperation in the strategic alliance.

There has been considerable debate regarding the status of contractual safeguards and trust as governance mechanisms. A number of authors have suggested that trust provides an alternative mechanism for governing the combination of resources relative to contractual safeguards (e.g., Aulakh, Kotabe, & Sahay, 1996; Bradach & Eccles, 1989; Gulati, 1995). These studies suggest that trust may function as a substitute for contract-based control by providing a more effective mechanism for reducing opportunism, providing incentives for cooperation, and reducing the costs of adaptation. In contrast, other studies suggest that trust may complement, rather than substitute, formal governance mechanisms such as contractual safeguards (e.g., Luo, 2002; Poppo & Zenger, 2002; Lui & Ngo, 2004). Poppo & Zenger (2002) suggest, for instance, that while contracts provide a baseline set of procedures to regulate cooperation and the payoff structure under a foreseeable set of contingencies, trust promotes cooperation and adaptation under conditions of unexpected or unpredictable change and may counteract exchange hazards that are not contractually specified. These divergent theoretical perspectives lead to opposing predictions. The notion of substitutability suggests that the governance of strategic alliances is primarily based on one type of mechanism, either contractual safeguards or trust (Poppo & Zenger, 2002). Hence,

Hypothesis 12a. The level of interorganizational trust between the partnering firms will be negatively related to the level of contractual safeguards embedded in the strategic alliance.

The notion of complementarity suggests, instead, that the presence of mutually agreed contracts may promote the development of mutual trust between the partnering firms and that the presence of trust may also facilitate the renegotiation and flexibility of contractual safeguards (Poppo & Zenger, 2002). Thus,

Hypothesis 12b. The level of interorganizational trust between the partnering firms will be positively related to the level of contractual safeguards embedded in the strategic alliance.

2.1.3. Post-Formation Dynamics

Although initial conditions and the choice of governance structure are central elements in alliance formation, the ability to realize the potential value from pooling resources and activities owned by different firms is primarily determined by the post-formation interaction between the alliance partners and how it evolves over time. Indeed, a number of theoretical accounts and clinical studies on the evolution of alliances suggest that both the imprinting effects of initial conditions and governance decisions, and the relational processes that unfold between the partnering firms are fundamental to understanding alliance performance (e.g., Ariño & de la Torre, 1998; Doz, 1996; Ring & Van de Ven, 1994). Prior research suggests that cooperation and information exchange are fundamental parameters that characterize the post-formation dynamics between the alliance partners (e.g., Mohr & Spekman, 1994; Sarkar, Echambadi, Cavusgil, & Aulakh, 2001). Although there might be other factors that characterize the post-formation alliance dynamics, prior research has devoted much of its attention towards co-operation and information exchange.

Information exchange reflects the frequency, quality, breath and depth of information exchanged between the partnering firms (e.g., Mohr and Spekman, 1994). Frequent and detailed information exchange facilitates the coordination of the alliance activities, reduces information asymmetries, facilitates the identification of new opportunities for exploiting complementarities between the partners, and increases the speed and flexibility of adaptation to internal or external changes with positive effects on alliance performance.

Cooperation refers to the extent to which the partners deliberately engage in activities focused on ensuring coordination, responding to the needs of the other partner, striving to achieve mutually beneficial solutions in conflict resolution, and are committed to maintaining a satisfactory partnership (e.g., Luo, 2002; Mohr and Spekman, 1994). Thus, cooperation is likely to facilitate conflict resolution, increase coordination and promote partners' investment in relationship-specific assets. Thus,

> *Hypothesis 13a-b. The level of (a) information exchange and (b) cooperation will be positively related to alliance performance.*

An important feature of post-formation dynamics between the alliance partners is that, rather than being static, they are likely to evolve over time as the alliance unfolds (Ariño & de la Torre, 1998; Doz, 1996; Ring & Van de Ven, 1994). In particular, the accumulation of collaborative experience is likely to lead to the development of relational routines between the alliance partners (Deeds & Rothaermel, 2003; Zollo et al., 2002). These routines may encompass multiple domains of the relationship including coordination of the operational activities, conflict resolution, and information exchange, and may have positive effects on alliance performance. Hence,

> *Hypothesis 14a-c. Alliance age will be positively related to (a) the level of information exchange and (b) cooperation between the alliance partners, and (c) alliance performance.*

2.2. METHODS

2.2.1. Sample

We combined multiple data collection strategies to identify empirical studies of strategic alliance performance. First, articles were identified through a bibliographic search of computerized databases. ABI/Inform Global, EconLit, JSTOR, Kluwer Online, Elsevier Science Direct, and the Social Science Citation Index were searched using the terms 'joint venture(s)' and 'strategic alliance(s)'. Second, we performed manual searches (over the 1980 to 2004 period) of 10 leading

journals in management and marketing, including: *Academy of Management Journal, Administrative Science Quarterly, Journal of International Business Studies, Journal of Management, Journal of Marketing, Journal of Marketing Research, Management Science, Organization Science, Organization Studies,* and *Strategic Management Journal*. Third, we performed Internet searches using standard search engines. Finally, we examined the reference sections of all the articles retrieved and of prior narrative reviews of the strategic alliance literature (e.g., Gulati, 1998).

Inclusion criteria. We determined the eligibility of studies for the meta-analysis on the basis of several criteria. First, we focused on studies that measured alliance performance in terms of objective financial indicators or informants' perceptual assessment of performance. Studies based on alliance duration as a proxy for performance were excluded because duration fails to distinguish between the different causes of termination (alliance termination due to failure or alliances that were established for a predefined duration), and because longevity may not reflect performance but may instead reflect the presence of barriers to exiting the alliance (Gulati, 1998; Hennart, Roehl, Zietlow, 1999). Second, a study had to report on one or more relationships between an antecedent of performance and a measure of alliance performance. Third, a study had to report the sample size and correlations or other statistics that could be transformed into correlation coefficients using the formulas provided by Hunter and Schmidt (1990: 272).

Coding. Two judges independently coded each study. The construct operationalizations reported in the original studies were used to classify all correlations. The coding process identified five distinct operationalizations of alliance performance: (a) measures of alliance performance based on informants' assessment of the extent to which the alliance attained its initial objectives; (b) composite measures of alliance performance that typically measured the outcomes of the alliance in terms of overall satisfaction with the alliance, economic performance, quality of collaboration, and knowledge transfer; (c) measures based exclusively on economic indicators of alliance performance such as return on investment or market share; (d) measures based on the informants' overall satisfaction with the alliance; and (e) measures based on the informants' overall satisfaction with the partner. Although we coded correlations relating the various determinants of alliance performance to each of the five indicators, only for three measures

(attainment of objectives, composite performance, and economic performance) there was sufficient cumulative evidence (three or more independent estimates) to warrant their inclusion in the meta-analysis (Dalton, Daily, Certo, & Roengpitya, 2003). The overall level of interrater reliability for coding decisions was 98%. Inconsistencies were resolved through discussion.

Nonindependence. To ensure that our analysis met the assumption of sample independence, we used two criteria. First, if a sample reported more than one correlation for a single relationship, these correlations were averaged and only the average correlation was included in the meta-analysis. Second, if multiple publications were based on the same or partially overlapping dataset, we did not include correlations between the same variables from more than one study. In such cases, we included the correlation based on the larger sample size.

Outliers. We computed Hufcutt and Arthur's (1995) sample-adjusted meta-analytic deviancy statistic to identify outlying correlations. On the basis of these analyses, 15 outliers were dropped from the dataset. This process resulted in a final dataset of 265 correlations from 78 empirical studies each corresponding to an independent sample with a total sample size of 15,201 strategic alliances.

2.2.2. Meta-Analytic Procedure

Our meta-analysis was conducted using Hunter and Schmidt's (1990) psychometric meta-analysis method. This approach allows for the correction of statistical artifacts and thus provides a more precise estimate of the magnitude and variance of a relationship in the population of interest. Correlations were individually corrected for artificial dichotomization of continuous independent and dependent variables, range restriction in independent and dependent dichotomous variables, and for the downward bias in r as a measure of the population correlation (Hunter & Schmidt, 1990). These correlations were then meta-analyzed and corrected for sampling error. Finally, and since information on measurement error was not available for all individual correlations, the meta-analytic correlations were then corrected for measurement error in the dependent and independent variables using the method of artifact distributions (Hunter & Schmidt, 1990). We also estimated 95 percent confidence intervals around the mean-weighted correlations. This process yielded a meta-analytic correlation matrix, reported in Table 1, where

each cell corresponds to an individual meta-analysis. The table reports a sample-size-weighted average correlation corrected for statistic artifacts (ρ), the standard deviation of ρ (SD_{ρ}), the number of independent samples used to estimate each ρ (k), and the total sample size for each correlation (N).

Moderator analysis. For each meta-analytic correlation we conducted homogeneity analyses to evaluate the extent to which the estimated correlations were drawn from the same population. Homogeneity analyses were based on the Q statistic that follows a chi-square distribution (Hedges and Olkin, 1985). Significant values of Q indicate that the relationship is heterogeneous and suggest the presence of moderators in the relationship.

For the determinants of alliance performance that were heterogeneous we investigated the effect of three potential substantive moderators capturing important alliance and environmental characteristics: (a) form of the alliance: equity vs. non-equity alliances; (b) industry sector of the alliance: manufacturing vs. non-manufacturing; and (c) geographic scope of the alliance: domestic vs. international alliances. To test the effect of these potential moderators we performed weighted regression analyses in which sample size is used as a weight (Hedges & Olkin, 1985)[2].

Structural equations modeling. The meta-analytic correlation matrix was used as an input to test our model. The measure of alliance performance based on economic indicators was not included as the number of correlations between this measure and the independent variables was too low. Because our model is recursive, parameters can be estimated using Ordinary Least Squares regression (e.g., Geyskens, Steenkamp, and Kumar, 1998). Since correlations in each cell were based on different sample sizes, model estimation was based on the harmonic mean N of 461.

[2] To ensure stability in our results we restricted our moderator analyses to correlations based on five or more independent samples.

TABLE 1
Meta-Analytic Correlation Matrix[a]

	1	2	3	4	5	6	7	8	9	10	11
1. Age	-	787 (7)	882 (6)	1,360 (8)	882 (5)	322 (3)	1420 (9)	531 (3)	260 (3)	513 (6)	1,087 (10)
2. Communication	-.07 (.00)	-	184 (2)	282 (2)	1,020 (6)	143 (2)	581 (4)	191 (2)	765 (8)	374 (5)	844 (7)
3. Contract	.03 (.15)	.03 (.00)	-	513 (2)	1,246 (4)	276 (3)	667 (5)	922 (4)	601 (5)	378 (3)	1744 (10)
4. Equity	.10 (.13)	-.18 (.1)	-.1 (.2)	-	599 (3)	504 (3)	959 (5)	373 (2)	255 (1)	280 (4)	883 (7)
5. Cooperation	.12 (.00)	.39 (.09)	.1 (.00)	.06 (.00)	-	960 (4)	737 (4)	821 (4)	792 (7)	728 (8)	1,065 (7)
6. Complementarity	-.03 (.00)	.05 (.00)	.1 (.00)	.06 (.00)	.18 (.05)	-	410 (4)	190 (2)	535 (5)	257 (4)	451 (5)
7. Culture	-.02 (.00)	.08 (.15)	0 (.14)	.02 (.00)	.09 (.12)	.04 (.02)	-	493 (3)	249 (2)	114 (2)	1,146 (9)
8. Ties	-.11 (.00)	-.09 (.00)	.07 (.00)	.08 (.06)	.19 (.22)	-.08 (.00)	-.05 (.14)	-	499 (4)	522 (4)	1,170 (9)
9. Trust	-.04 (.09)	.42 (.1)	-.05 (.00)	.13 (.00)	.41 (.21)	.04 (.2)	-.35 (.00)	.24 (.00)	-	529 (6)	1117 (10)
10. Objectives	.39 (.17)	.33 (.00)	-.07 (.03)	-.01 (.23)	.41 (.09)	.23 (.00)	-.11 (.00)	.31 (.00)	.58 (.22)	-	335 (3)
11. Composite	.17 (.08)	.32 (.07)	.09 (.11)	.14 (.00)	.49 (.17)	.22 (.07)	-.09 (.08)	.3 (.00)	.41 (.11)	.3 (.00)	-

[a] Lower diagonal: mean corrected correlations ρ and standard deviations SD_ρ of ρ (in parentheses). Upper diagonal: total sample size *N* and number of studies *k* (in parentheses) from which the ρ were estimated. * indicates significant *Q*-statistic, suggesting the presence of moderators.

2.3. RESULTS

2.3.1. Meta-Analysis

Table 2 presents the meta-analytic results for the direct effects of initial conditions, governance structure, and post-formation dynamics on three dimensions of alliance performance: (a) the extent to which the initial objectives of the alliance were attained (objectives); (b) a composite indicator of alliance performance (composite); and (c) economic performance (economic).

The results indicate that initial conditions, interorganizational trust, and post-formation dynamics between the partnering firms are key drivers of alliance performance. Indeed, the type of resources- strategic and organizational- pooled in the alliance ($\rho_{objectives}$ = .23, $\rho_{composite}$ = .22), the existence of prior alliances ($\rho_{objectives}$ = .31, $\rho_{composite}$ = .30, $\rho_{economic}$ = .21), the level of interorganizational trust ($\rho_{objectives}$ = .58, $\rho_{composite}$ = .41, $\rho_{economic}$ = .41), the age of the alliance ($\rho_{objectives}$ = .39, $\rho_{composite}$ = .17, $\rho_{economic}$ = .32), information exchange ($\rho_{objectives}$ = .33, $\rho_{composite}$ = .32), and cooperation between the alliance partners ($\rho_{objectives}$ = .41, $\rho_{composite}$ = .49, $\rho_{economic}$ = .35) have relatively large and positive effects on the extent to which the partners are able to achieve the objectives driving alliance formation, the composite performance of the alliance, and its economic performance. In contrast, the cultural distance between the partners ($\rho_{composite}$ = .09, $\rho_{economic}$ = .10), asymmetric ownership structure ($\rho_{objectives}$ = -.01, $\rho_{composite}$ = .14, $\rho_{economic}$ = .09), and the level of contractual safeguards ($\rho_{objectives}$ = .07, $\rho_{composite}$ = .09) have relatively small direct effects on alliance performance.

The positive performance effects of initial conditions reflect the importance of the resources combined in the alliance as the primary source of potential value creation. In addition, the strong direct effects of post-formation dynamics highlight the role of the collaborative behavior between the partnering firms in realizing this potential value. Finally, the limited impact of formal governance mechanisms and cultural distance on alliance performance is likely to reflect the fact that, as hypothesized, these factors primarily influence the post-formation dynamics between the partnering firms rather than having a direct effect on performance.

TABLE 2
Meta-Analytic Results for the Determinants of Strategic Alliance Performance[a]

Predictor	Performance Variable	k	N	Mean r	ρ	Var. ρ	$CI_ρ$ 5%	$CI_ρ$ 95%	Residual Var.	% Var. Explained	Q
				Initial Conditions							
Complementarity	Attainment of objectives	4	257	.19	.23**	.00	.07	.31	.00	87.57	4.57
	Composite performance	5	451	.18	.22**	.00	.09	.27	.00	76.95	6.50
Cultural distance	Composite performance	9	1,146	-.08	-.09**	.01	-.14	-.02	.01	6.70	14.83
	Economic performance	3	1,311	-.08	-.10**	.00	-.14	-.03	.00	79.02	3.80
Prior ties	Attainment of objectives	4	522	.23	.31**	.00	.15	.31	.00	123.72	3.23
	Composite performance	9	1,170	.23	.30**	.00	.17	.28	.00	159.04	5.66
	Economic performance	3	529	.15	.21**	.00	.06	.23	.00	131.15	2.29
				Governance Structure							
Contractual safeguards	Attainment of objectives	3	378	-.05	-.07	.00	-.15	.05	.00	95.00	3.16
	Composite performance	10	1,744	.07	.09**	.01	.03	.12	.01	43.03	23.24**
Interorganizational trust	Attainment of objectives	6	529	.48	.58**	.05	.42	.55	.03	18.20	32.96**
	Composite performance	10	1,117	.34	.41**	.01	.29	.39	.01	48.41	2.65*
	Economic performance	4	658	.32	.41**	.01	.25	.39	.01	48.06	8.32*
Asymmetric ownership	Attainment of objectives	4	280	-.01	-.01	.05	-.13	.11	.03	31.17	12.83**
	Composite performance	7	883	.11	.14**	.00	.04	.17	.00	136.87	5.11
	Economic performance	6	2,616	.07	.09**	.00	.03	.11	.00	77.72	7.69
				Post-Formation Dynamics							
Information exchange	Attainment of objectives	5	374	.27	.33**	.00	.17	.36	.00	165.38	3.02
	Composite performance	7	844	.26	.32**	.07	.20	.33	.00	67.59	1.01
Cooperation	Attainment of objectives	8	728	.33	.41**	.01	.27	.40	.01	61.64	12.98
	Composite performance	7	1,065	.40	.49**	.03	.35	.45	.02	21.96	31.88**
	Economic performance	4	905	.27	.35**	.00	.20	.33	.00	352.47	1.13
Alliance age	Attainment of objectives	6	513	.32	.39**	.03	.24	.40	.02	33.92	17.68**
	Composite performance	10	1,087	.14	.17**	.01	.08	.20	.00	68.33	14.63
	Economic performance	7	4,503	.24	.32**	.02	.22	.27	.01	12.30	56.89**

[a] k = number of correlations from independent studies; N = total sample size; Mean r = sample-size-weighted mean uncorrected correlation; ρ = estimate of population correlation; Var_ρ = estimate of the true population variance ρ; CIρ 5% = lower bound of the 95% confidence interval for ρ; CIρ 95% = upper bound of the 95% confidence interval for ρ; Residual Var. = residual variance; % Var. explained. = percentage of observed variance accounted for by statistical artifacts; Q = chi-square test for heterogeneity.

* $p < .05$; ** $p < .0$

2.3.2. Moderator Analysis

The results, reported in Table 2, show that the effects of most determinants of alliance performance generalize across primary studies. In fact, of the 23 effects investigated only 8 had heterogeneous effects on alliance performance, as indicated by significant Q-statistics. Specifically, our results show the presence of moderators on the effects of contractual safeguards, interorganizational trust, cooperation, and alliance age on alliance performance.

Table 3 reports the results of the moderator analyses. Results show that the performance effect of contractual safeguards is lower for equity alliances than for non-equity alliances (β = -.47; p < .10). Although only marginally significant, this finding suggests that contracts and equity function to a certain extent as substitute governance mechanisms. In addition, results suggest that the performance effects of contractual safeguards are higher for international relative to domestic alliances (β = .75; p < .01). This is consistent with the notion that international alliances are generally more difficult to govern as a result of cultural distance and environmental uncertainty and thus benefit from more complex contracts.

Regarding the effects of trust on alliance performance our results do not provide support for a consistent pattern of moderators across the various performance measures. We found, however, that the link between trust and the attainment of alliance objectives is stronger for equity than for non-equity alliances (β = .49; p < .05). This suggests that trust and equity governance may function as complementary mechanisms for governing strategic alliances.

Our results also show that the benefits from cooperation are marginally higher for international alliances (β = .48; p < .10) suggesting that the partners' collaborative behavior may help overcome cultural differences. Finally, we found that the performance effects of alliance age are higher for alliances in manufacturing (β = .78; p < .05), indicating that perhaps the benefits from experience accumulation are higher for these type of alliances.

TABLE 3
Results of Weighted Regression Analyses for the Determinants of Strategic Alliance Performance[a]

Predictor	Performance Variable	Equity alliance	International alliance	Manufacturing	R^2	Q residual	*N*	*k*
Contractual safeguards	Composite performance	-.47†	.75**	.14	.42*	13.21*	1,744	10
Interorganizational trust	Attainment of objectives	.49*	-.21	.16	.27	15.25**	529	6
Interorganizational trust	Composite performance	-.08	-.31	-.17	.22	13.01*	1,117	10
Cooperation	Composite performance	-.33	.48†	-.02	.15	21.34**	1,065	7
Alliance age	Attainment of objectives	-.08	-.01	.78*	.68*	4.61†	513	6
Alliance age	Economic performance			.28	.08	13.20*	4,503	7

[a] Cell entries are standardized coefficient estimates. *k* = number of correlations from independent studies; *N* = total sample size; *Q residual* = chi-square test for heterogeneity in regression residuals.

† $p < .10$
* $p < .05$
** $p < .01$

2.3.3. Multivariate Analysis of the Determinants of Alliance Performance

In Figure 1 we report the results for our hypotheses regarding the determinants alliance performance using OLS regression. Since multiple regression controls for the relationships between the independent variables, this analysis provides a more precise test of our hypotheses relative to the results of bivariate analyses.

Initial conditions. According to Hypothesis 1, the combination of complementary resources, capabilities, and activities in the alliance has a positive effect on alliance performance. Consistent with this hypothesis, complementarity had a positive effect on both the attainment of alliance objectives (β = .19; p < .01) and composite performance (β = .15; p < .01). In addition, we predicted that complementarity would not only impact alliance performance directly, but also indirectly by influencing the governance structure of the alliance. Corroborating Hypotheses 2 but not Hypothesis 3 we found that complementarity had a positive effect on the level of contractual safeguards embedded in the alliance (β = .11; p < .05), but had no significant effect on the distribution of equity ownership among the alliance partners (β = .06; n.s.). Thus, the higher the degree of partner interdependence stemming from combining complementarity resources and activities, the higher the level of contractual safeguards established in the alliance.

Hypotheses 4, 5 and 6 propose that the existence of prior ties between the alliance partners would influence the governance structure of the alliance and the post-formation dynamics between the partners by creating a baseline level of interorganizational trust and fostering the development of collaborative routines. Providing support for Hypothesis 5, our results show that the presence of prior ties had a positive effect on the level of interorganizational trust (β = .25; p < .01). In contrast to Hypothesis 4, however, we found that prior ties had a negative effect on information exchange (β = -.19; p < .05). That is, a history of prior mutual cooperation between the alliance partners was associated with lower rather than higher levels of information exchange. This finding may perhaps reflect the fact that prior alliances provided partners with extensive opportunities for information exchange and for the development of collaborative routines, which in turn, attenuate the need for intensive exchange of information in subsequent alliances. Contrary to Hypothesis 6, the existence of prior ties was associated with higher and not lower levels of contractual safeguards (β = .11; p < .05). Thus, we found no evidence for the

notion that the accumulated trust and joint experience arising from prior ties allow firms to reduce the complexity of subsequent contractual arrangements. What the results suggest, instead, is that the knowledge obtained from joint collaborative experience is used by firms to tighten their subsequent contractual agreements, perhaps in an attempt to establish more effective governance mechanisms.

Hypothesis 7 and 8 focused on the potential negative impact that differences in national culture between the partners may have on the collaborative relationship and how firms may attempt to mitigate these effects by increasing the level of contractual safeguards. Interestingly we found that, contrary to Hypothesis 7, the level of cultural distance had a positive, rather than negative, effect on interorganizational cooperation (β = .28; p < .01). Thus, firms appear to generally respond to cultural differences by engaging in a higher level of cooperation with their partners. However, this response is not typically effective as indicated by the negative direct effect of cultural distance on alliance performance (see Table 1). The predicted positive effect of cultural distance on the level of contractual safeguards was nonsignificant (β = -.03; n.s.). Thus, Hypothesis 8 was not supported.

Governance structure. Hypothesis 9, 10a, 10b, 11a, and 11b predicted that the governance structure of the alliance would be a key determinant of the post-formation dynamics between the alliance partners. Hypothesis 9 focused on the role of contractual safeguards. It predicted that because more complex contracts create a normative framework to deal with a wide range of contingencies and increase predictability and the costs of opportunism, they should promote cooperation. Corroborating this hypothesis, the results show that the level of contractual safeguards has a positive effect on cooperation (β = .12; p < .01).

Hypothesis 10a and 10b focused on the structure of incentives associated with a symmetric distribution of equity ownership between the partners, relative to an asymmetric distribution. It predicted that symmetric equity ownership would be associated with higher incentives to exchange information and cooperate. Support for our hypotheses was mixed. Results show a negative relationship between asymmetric ownership and information exchange (β = -.22; p <

.01), and a nonsignificant link between asymmetric ownership and cooperation (β = -.02; n.s.). Thus, we found support for Hypothesis 10a but not for 10b.

Hypotheses 11a and 11b examined the impact of interorganizational trust on post-formation collaboration between the partnering firms. They predicted a positive effect of trust on both information exchange and cooperation, respectively. Consistent with both hypotheses, we found a positive relationship between interorganizational trust and the level of information exchange (β = .50; p < .01), and between trust and cooperation (β = .53; p < .01). Importantly, trust was the determinant that had the strongest effect on post-formation dynamics, suggesting its importance in shaping the evolution of strategic alliances.

The relative status of trust and contractual safeguards as governance mechanisms was tested by examining the direction of this relationship (cf. Poppo & Zenger, 2002). A negative relationship between trust and contractual safeguards would provide support for a substitute relationship between these two governance mechanisms, whereas a positive relationship would suggest a complementary relationship. Meta-analytic results reported in Table 2 show that the bivariate relationship between these two variables is nonsignificant (ρ = -.05; n.s.) and that this result is homogeneous and thus generalizes across primary studies (*Q-statistic* = 1.84; n.s.). When examining this relationship while controlling for the effect of other variables, the evidence is similar. Results reported in Figure 1 show that the level of contractual safeguards has no significant effect on interorganizational trust (β = -.07; n.s.), and that trust has a negative effect on contractual safeguards, which is marginally significant (β = -.10; p < .07). In sum, the meta-analytic evidence suggests that contractual safeguards and trust are independent governance mechanisms that evolve and operate in parallel.

Post-formation dynamics. Hypotheses 13a and 13b examined the impact of post-formation dynamics between the alliance partners on alliance performance. Specifically, we predicted that higher levels of information exchange and cooperation would allow partners to fully exploit the potential value arising from combining assets, activities, and capabilities in the alliance and would thus lead to higher performance. Consistent with these hypotheses, our results show that information exchange and cooperation had a positive effect on the attainment of the alliance

objectives ($\beta_{\text{information exchange}}$ = .25, $\beta_{\text{cooperation}}$ = .22 ; p < .01) and composite performance ($\beta_{\text{information exchange}}$ = .18, $\beta_{\text{cooperation}}$ = .37 ; p < .01).

Finally, we investigated the effect of alliance age on the partners' collaborative behavior and alliance performance. Our results provide support for the positive effect of alliance age on cooperation (β = .14; p < .01), the attainment of alliance objectives (β = .39; p < .01) and composite performance (β = .14; p < .01), corroborating all Hypotheses 14b and 14c. We did not find support for Hypothesis 14a as the effect of alliance age on information exchange was not significant (β = -.05; n.s.). These findings suggest that, over time, partners develop dyadic routines for cooperating and that these routines are beneficial for alliance performance.

2.4. DISCUSSION

The study of the determinants of alliance performance has been one of the most popular topics in research on strategic alliances. However, prior research has emphasized the development and testing of new theory rather than the establishment of empirical generalizations. Thus, despite extensive research no clear consensus exists regarding the antecedents of alliance performance. The present research cumulates 78 empirical studies to establish a quantitative synthesis of the influence of initial conditions, governance structure and post-formation dynamics on alliance performance. Table 4 provides a summary of our results.

To estimate the relative contribution of initial conditions, governance structure, and post-formation dynamics in explaining alliance performance we conducted two hierarchical regression analyses of the two measures of alliance performance (attainment of alliance objectives and composite performance) on all the distinct predictors included in our meta-analysis. Our results show that, collectively, the determinants investigated account for 67 percent and 41 percent of the variation in alliance performance measured in terms of attainment of objectives and composite performance, respectively. Importantly, all three classes of factors contributed to explain heterogeneity in strategic alliance performance. Specifically, initial conditions explained 17 percent (F (3,437) = 3.43; p < .01), governance structure 27 percent (F (3,434) = 7.06; p < .01), and post-formation 23 percent (F (3,431) = 101.11; p < .01) of

TABLE 4
Summary of results

Hypothesized Relationship	Hypothesis	Parameter Estimate	Hypothesis supported?
Governance Structure			
Prior ties → Trust	+	0.25**	Yes
Contract → Trust	+/-	-0.07	No
Complementarity → Asymmetric ownership	-	0.06	No
Complementarity → Contract	+	0.11*	Yes
Prior ties → Contract	-	0.11*	No
Cultural distance → Contract	+	-0.03	No
Trust → Contract	+/-	-0.10†	No
Post-Formation Dynamics			
Prior ties → Information exchange	+	-0.19**	No
Alliance age → Information exchange	+	-0.05	No
Trust → Information exchange	+	0.50**	Yes
Asymmetric Ownership → Information exchange	-	-0.22**	Yes
Cultural distance → Cooperation	-	0.28**	No
Trust → Cooperation	+	0.53**	Yes
Asymmetric Ownership → Cooperation	-	-0.02	No
Contactual safeguards → Cooperation	+	0.12**	Yes
Alliance age → Cooperation	+	0.14**	Yes
Strategic Alliance Performance			
Complementarity → Attainment of objectives	+	0.19**	Yes
Alliance age → Attainment of objectives	+	0.39**	Yes
Information exchange → Attainment of objectives	+	0.25**	Yes
Cooperation → Attainment of objectives	+	0.22**	Yes
Complementarity → Composite performance	+	0.15**	Yes
Alliance age → Composite performance	+	0.14**	Yes
Information exchange → Composite performance	+	0.18**	Yes
Cooperation → Composite performance	+	0.37**	Yes

† $p < .10$
* $p < .05$
** $p < .01$

variation in the attainment of alliance objectives. Similarly, initial conditions explained 16 percent ($F(3,437) = 27.09$; $p < .01$), governance structure 11 percent ($F(3,434) = 22.02$; $p < .01$), and post-formation variables 14 percent ($F(3,431) = 34.26$; $p < .01$) of variation in composite alliance performance. These supplementary analyses provide support for the importance of these three different classes of factors for understanding alliance performance. Below we summarize and interpret our findings regarding the various determinants of alliance performance and discuss potential directions for future research.

2.4.1. Initial Conditions

The meta-analytic evidence reported in this study suggests that the resources combined in the alliance are a key factor shaping the formation and performance of the strategic alliance. Indeed, we found that complementarity in the assets, activities, and capabilities combined in the alliance influenced its governance structure by increasing the level of contractual safeguards and also had a direct impact on alliance performance.

The development of collaborative routines and a baseline level of trust as a result of a prior history of cooperation between the partnering firms also had a relatively strong effect on both the governance structure and on the subsequent evolution of the collaborative relationship. Specifically, our findings show that the presence of prior ties increases the level of interorganizational trust. Remarkably, and contrary to our predictions we found that prior ties led to higher, rather than lower, levels of contractual safeguards. This finding is in contrast with research suggesting that, because prior ties are associated with higher levels of mutual trust (e.g., Gulati, 1995), they should reduce the risks of opportunism and lead to lower levels of contractual safeguards (e.g., Parkhe, 1993b). Our evidence seems to suggest, instead, that the increased partner-specific collaborative experience developed over time is used to craft more complex and detailed contracts. We also found that prior ties led to lower, rather than higher levels of information exchange. This finding may reflect the fact that considerable knowledge may have been exchanged between the partners in prior alliances and that, as a result, there is a lower knowledge asymmetry between the alliance partners in subsequent alliances. In addition, it may also suggest that the development of partner-specific collaborative routines may reduce the need for ongoing communication between the alliance partners.

Finally, despite the considerable volume of research examining the impact of cultural distance on internationalization and on alliance performance the present research suggests that this factor has a limited effect on the formation, evolution, and performance of strategic alliances. Our findings show that the cumulative correlation between cultural distance and alliance performance is small and that cultural distance had a positive, rather than negative, effect on cooperation. These results are consistent with recent meta-analytic evidence by Tihanyi, Griffith, and Russell (2005) suggesting that, on average, cultural distance has no significant effect on entry mode choice, international diversification, and the performance of multinational firms.

Taken together, our findings on the role of initial conditions highlight several potential avenues for future research. First, research could extend the range of initial conditions beyond those that have been addressed in the present study. Although research exists on factors such as organizational culture distance (e.g., Pothukuchi et al., 2002), the degree of relatedness between the partnering firms (e.g., Saxton, 1997), the motives underlying alliance formation (e.g., Hatfield and Pearce, 1994) and the partners' overall alliance experience (e.g., Zollo, Reuer and Singh, 2002) there was no sufficient cumulative evidence relating these factors to other variables in our model to allow their inclusion in our meta-analysis. Second, the unexpected findings regarding the link between prior ties and both contractual safeguards and information exchange emphasize the need for new theoretical and empirical work investigating in more detail the nature of these relationships and the underlying mechanisms. Third, the evidence obtained in this research regarding the limited role of national cultural distance, together with similar findings on the impact of this variable on the behavior and performance of multinational firms (Tihanyi et al., 2005) suggests that more research is needed to understand the role of cultural distance in alliances.

2.4.2. Governance Structure

Our meta-analytic findings attest to the importance of governance mechanisms in influencing the post-formation dynamics of the alliance and, in turn, its performance. Specifically, our findings show that higher levels of trust are associated with higher levels of information exchange and cooperation between the partnering firms. We found that interorganizational trust was the

strongest determinant of partners' collaborative behavior and alliance performance. However, we also found that the effect of trust on alliance performance, despite being frequently studied has produced mixed results. Moderator analyses indicated that this result is heterogeneous and found no consistent pattern of moderators that accounted for this heterogeneity. Given the centrality of trust as a determinant of alliance performance, future research should explore other potential moderating factors beyond those explored here.

Our findings also emphasize the importance of contractual safeguards and equity distribution in shaping cooperation in the alliance. We found that the presence of contractual safeguards promotes cooperation between the alliance partners and that a symmetric equity distribution increased information exchange. However, in contrast with the notion that equity distribution may influence the structure of incentives to cooperate in the alliance, the meta-analytic evidence did not find support for a link between these two variables. This may perhaps reflect the fact that firms align the equity distribution in the alliance with the characteristics of the transaction in order to maximize cooperation and, therefore, that different ownership structures are equally effective to the extent that they are aligned.

An important debate in the strategic alliance literature concerns the nature of relationship between trust and contractual safeguards as substitutes or complements (e.g., Lui and Ngo, 2004). The cumulative evidence obtained in this study suggests an interesting possibility regarding the link between these two governance mechanisms: rather than being substitutes or complements our results suggests that these two mechanisms may be independent. In other words, the processes underlying the development of trust and the design of contractual safeguards appear to operate in parallel and do not influence each other. Future research is needed, not only on the performance implications of distinct governance structures varying in the levels of trust and contractual safeguards, but also on the processes driving the configuration of governance structures in strategic alliances.

2.4.3. Post-Formation Dynamics

Finally, our results show that the post-formation collaborative dynamics between the alliance partners are key determinants of alliance performance. Indeed both information exchange and

cooperation had consistent and relatively strong effects on performance. Importantly, our results also suggest that, over time, partners tend to develop dyadic routines for collaboration and that these routines are beneficial for alliance performance. Specifically, our results show that older alliances generally exhibited higher levels of performance. These findings emphasize the importance of investigating the evolutionary and behavioral aspects of collaboration to fully understand the development and performance of strategic alliances. However, to date our understanding of alliance evolution remains limited. Future research may expand the range of variables measuring the post-formation collaborative processes that emerge between the alliance partners. In addition, considerable theoretical and empirical progress can be made by increasing the focus on longitudinal designs that capture more closely the evolutionary dynamics of collaboration.

In sum, our study is the first to conduct a quantitative synthesis of the extensive literature and obtain empirically precise generalizations on the determinants of strategic alliance performance. The empirical evidence provided strong evidence for the importance and the unique contribution of initial conditions, governance structure, and post-formation dynamics for understanding alliance-performance.

CHAPTER 3[3]

WHEN DOES INTERORGANIZATIONAL TRUST MATTER TO STRATEGIC ALLIANCE PERFORMANCE?

Strategic alliances blur firm boundaries and create mutual dependence between previously independent firms (McEvily, Perrone & Zaheer, 2003). A distinctive characteristic of strategic alliances is that partners have to deal not only with the uncertainty in the environment but also with the uncertainty arising from each other's behavior (Harrigan, 1985). Because of partners' dependence on each other, previous research has emphasized the importance of relational factors for the smooth functioning of strategic alliances (Powell, 1990). While various relational mechanisms and norms have been studied, including for instance norms of solidarity and flexibility (Poppo & Zenger, 2002: 712), none has received more attention than trust (Zand, 1972; Gambetta, 1988; Sako, 1991; Mayer, Davis & Schoorman, 1995; Zaheer, McEvily & Perrone, 1998; McEvily et al., 2003). Furthermore, much research in this tradition has identified interorganizational trust as a key factor contributing towards alliance success, the general view being that trust has a positive effect on alliance performance (e.g., Dyer & Chu, 2003; Mohr & Spekman, 1994; Zaheer et al., 1998).

The existence of trust between alliance partners cannot be taken for granted, however; partners might not only have to cultivate trust intentionally (Inkpen & Currall, 2004; Parkhe, 1998; Sako, 1991), but also incur substantial real and opportunity costs in its pursuit (McEvily et al., 2003; Poppo & Zenger, 2002). Furthermore, interorganizational trust need not always improve alliance performance (McEvily et al., 2003). Indeed, researchers are beginning to recognize that the relationship between trust and alliance performance may be complicated and contingent on other factors. Thus, Carson, Madhok, Varman & John (2003) argue that the effect of trust on task performance in vertical R&D collaborations strengthens with the client's ability to understand the tasks involved. Langfred (2004) argues that the effect of trust on performance of self-

[3] This paper is the result of joint work with Xavier Martin and Niels Noorderhaven.

managing teams reverses under high individual autonomy. These studies suggest that the benefits derived from trust may magnify under certain conditions and diminish under other conditions. However, contingent reasoning has yet to be applied to the effect of uncertainty, which in its dual form is potentially the most fundamental strategic factor in alliances (Harrigan, 1988; Kogut, 1989).

There is extensive support in prior research for the overall beneficial effect of trust in the presence of one form of uncertainty. Scholars have shown that trust, by bringing about good faith in the intent, reliability and fairness of partner behavior (Sako, 1991; Zaheer et al., 1998), allows for constructive interpretation of partner motives (McEvily et al., 2003; Uzzi, 1997), reduces the potential for conflict (Zaheer et al., 1998), and encourages smooth information flow between partners (Sako, 1991; Zand, 1972). Trust thus mitigates concerns about uncertainty in partner behavior. Yet, the same qualities of trust that reduce uncertainty in partner behavior and engender its beneficial effects may also limit cognitive efforts of partners. Previous research has shown that the perception of reliability of the information from the partner and the cognitive comfort that trust brings about also limits the variety of thought and action and the attentiveness to details of the firms (e.g., Langfred, 2004; Webb, 1996: 292). Therefore trust may reduce the alertness needed when alliance partners have to respond to uncertainty in the environment. The result may be that partners inadequately respond, or even fail to respond, to the challenges posed by the environment. Thus trust seems to entail a trade-off between the capacity to deal with behavioral and with environmental uncertainty.

In this paper we examine this possible trade-off by theorizing that trust has differential effects on alliance performance, depending on the levels of behavioral and environmental uncertainty. We define strategic alliances as any extended cooperative agreement intended at joint development, manufacture, and/or distribution of products (Gulati, 1998; Zollo, Reuer & Singh, 2002: 701). While trust helps alliance partners to cope with uncertainties pertaining to each other's behavior, trust also tends to constrain partners' responses to environmental demands, thus hindering them from responding appropriately to environmental uncertainty. Below, we develop these arguments in greater detail, and test the resulting hypotheses on a sample of 126 international strategic alliances in India.

3.1. TRUST AND ALLIANCE PERFORMANCE

The concept of trust has received ample attention from various disciplines, and although diverse interpretations of trust have been put forward in prior research, a common core emerges. Building on this prior research, we define interorganizational trust as the expectation held by one firm that another would not exploit its vulnerabilities when faced with the opportunity to do so (Barney & Hansen, 1994; Mayer, Davis & Schoorman, 1995; Sako, 1991). This expectation is confirmed when parties (1) demonstrate reliability by carrying out their promises; (2) act fairly when dealing with each other; and (3) exhibit goodwill when unforeseen contingencies arise. Our definition thus bases interorganizational trust on three related components: reliability, fairness and goodwill (Dyer & Chu, 2003).

The goodwill component in the definition of trust extends beyond contractual obligations in that partners commit themselves and contribute to the relationship beyond what was explicitly guaranteed (Sako, 1991: 453). Hence, trust stands to be relevant in situations where firms make substantial and open commitments to a partnership. This most prominently include alliances (Mohr & Spekman, 1994; Gulati, 1995).

One prominent concern with alliances is that conflict between partners can occasion high costs or a premature breakdown of the relationship (Zaheer et al., 1998) Trust helps defuse such conflict, because trusting partners are more likely to interpret each other's equivocal actions in a manner conducive to the stability of the relationship. As Noorderhaven (2004) argued on the basis of case studies by Doz (1996), if a firm encounters unexpected actions by the partner that could be ascribed to both good and bad intentions, the presence of trust reduces the likelihood of a negative interpretation. For instance, when confronted with disappointing sales of a product line, a partner might either explain the inadequate performance on the basis of an ineffective promotional campaign, or view the failure as signaling a lack of commitment of the other party's distributors. Under such equivocal situations, trust facilitates mutual understanding and allows for the benefit of the doubt. It thus reduces the costs of interpartner conflict as well as other transaction costs (Dyer & Chu, 2003; Zaheer et al., 1998). Research also shows that such costs are negatively related to alliance performance (Zaheer et al., 1998). Therefore, all else equal,

trust improves alliance performance. Hence:

Hypothesis 1. Trust is positively related to alliance performance.

The above hypothesis does not mean that trust improves performance of all alliances equally. Next, we argue that the relationship between trust and alliance performance is moderated by the type of uncertainty that alliance partners encounter. In this respect, we distinguish between two types of uncertainty that are relevant to interfirm relations (Sutcliffe & Zaheer, 1998; Williamson, 1985): environmental uncertainty, which results from exogenous sources outside the scope of the alliance; and behavioral uncertainty, which results from the unpredictability and the potential impact of the actions of an exchange partner. Below, we develop predictions such that the trust-performance relationship is likely to be stronger under behavioral uncertainty but weaker under environmental uncertainty.

3.1.1. Trust, Behavioral Uncertainty Concerns and Alliance Performance

Concern about partner behavior is a predominant source of internal tension in strategic alliances (Parkhe, 1993b; Park & Ungson, 2001; Sutcliffe & Zaheer, 1998). Behavioral uncertainty concerns (henceforth 'behavioral uncertainty', in short) refer to alliance (or transaction) partners' concerns about their inability to accurately predict each other's actions in the relationship, particularly in view of the possibility of intentional or unintentional harm resulting from such actions (Nooteboom, 2002; Williamson, 1985). Behavioral uncertainty arises from possibilities such as poor performance or withholding of information by an alliance partner (Parkhe, 1993b; Sutcliffe & Zaheer, 1998), or the attempts by one partner to opportunistically appropriate the other's valuable resources (Hamel, 1991; Khanna, Gulati & Nohria, 1998).

Although behavioral uncertainty is never completely absent, its magnitude varies across alliances. Such concerns are exacerbated in alliances with two characteristics (Das & Teng, 2000; Park & Ungson, 2001): those in which contributions of the partners are highly intertwined (Nooteboom, 2002; Stinchcombe, 1985), i.e. in alliances involving high interdependence between partners (Park & Russo, 1996); or those where each partner is likely to further private interests at the expense of collaborative interests (Khanna et al., 1998; Park & Ungson, 2001),

most prominently in alliances between potential competitors (Bleeke & Ernst, 1993; Hamel, 1991; Kogut, 1988; Oxley & Sampson, 2004; Park & Russo, 1996).

Interdependence. The degree of interdependence in an alliance increases with the importance and extent of the resources shared between partners and with the resulting overlap in division of labor between them (Gulati & Singh, 1998; Kumar & Seth, 1998; Thompson, 1967). Alliances that are set up to share production facilities typically create only weak interdependencies (Gulati & Singh, 1998). Resource allocations and role assignments in these partnerships tend to be straightforward and stable, and the division of labor is thus likely to be simple. In contrast, alliances formed for joint development of new technology or to speed up innovation such as 'designing a leading edge microprocessor' lead to high interdependence (Nickerson & Zenger, 2004: 620; Park & Russo, 1996). These alliances are characterized by substantial overlap between the partners' responsibilities, and involve ongoing mutual adjustment between partners (Gulati & Singh, 1998).

With high interdependence activities, including alliances, coordination is difficult because the uncertainty or non-routineness due to interdependence discourages both the assigning of a specific division of labor between parties and the formalization of standard operating procedures (e.g. Miller, Glick, Wang & Huber, 1991). Instead, the overlapping division of labor requires coordination by mutual adjustment (Thompson, 1967). The timing and effectiveness of such adjustment is all the more uncertain as interdependence precludes the use of standard interfaces and integrative devices (Park & Russo, 1996). Thus, the higher the interdependence, the more likely that any change made by one partner will affect the other in unplanned ways, and the more immediate and severe the adverse impact of any mistake (intentional or not) by the partner (Thompson, 1967; Nooteboom, 2002). Therefore, behavioral uncertainty increases with the interdependence between alliance partners.

In addition, high interdependence requires the partners to share and expose valuable knowledge-intensive resources to their partner (Kumar & Seth, 1998; Nooteboom, 2002; Park & Russo, 1996; Park & Ungson, 2001). Being harder to observe, value and protect, such knowledge intensive resources increase the potential for misunderstandings concerning each partner's

intents and contributions to the alliance (Oxley, 1999). This, magnified by the closely intertwined partner contributions, renders coordination all the more uncertain in high-interdependence alliances (Park & Russo, 1996). Difficulty in discerning contributions further threatens the open sharing of resources and information among partners, and consequently the management of the ongoing relationship.

Interorganizational trust stands to be especially beneficial in the presence of such behavioral uncertainty. By asserting good faith in the intent and reliability of partner behavior, trust allows partners to engage in constructive interpretation of each other's actions (Zaheer et al., 1998). It also encourages partners to be aware of the processes and procedures that each partner follows (Gulati & Singh, 1998). Thus, trust alleviates apprehensions regarding the sharing of information concerning valuable resources and encourages partners to discover better ways of managing their interface. The resulting information exchange and socialization assist in crafting effective integration and coordination mechanisms. Under high interdependence, interorganizational trust is therefore essential for alliance performance, as it facilitates mutual adjustment and allows the smoother synchronization of critical tasks.

Conversely, we expect trust to have a weaker effect on alliance performance under low interdependence conditions, as the overlap in the division of labor between partners is lower and hence the scope for misinterpretations and tensions is likely to be lower as well (Gulati & Singh, 1998). Hence, the following hypothesis:

> *Hypothesis 2. The positive relation between trust and alliance performance will be stronger in alliances with a high degree of interdependence between partners than in alliances with low interdependence.*

Inter-partner competition. Inter-partner competition exists when a partner tries to maximize its private interests at the expense of the alliance or the other partner (Baum, Calabrese & Silverman, 2000; Park & Russo, 1996; Park & Ungson, 2001). In alliances formed between potential competitors, concerns about opportunistic exploitation loom especially large, in that partners may have strong incentives to appropriate each other's resources (Khanna et al., 1998;

Oxley & Sampson, 2004). Prior research has shown that alliances between potential competitors engender greater tendencies of partners to engage in such 'de-facto internalization' (Baum et al., 2000; Hamel, 1991: 84). Moreover, because potential competitors are familiar with the areas that their partner operates in, they have superior capacity to absorb and reuse proprietary knowledge (Cohen & Levinthal, 1990; Park & Russo, 1996).

As a result, potential inter-partner competition also exacerbates partners' tendencies to protect their own resources, especially knowledge, at the risk of hampering the alliance relationship (Hamel, 1991; Kale, Singh & Perlmutter, 2000). By detracting partners from contributing fully towards the performance of the alliance, these concerns interfere with the realization of the synergistic benefits of the alliance (Madhok & Tallman, 1998; Grindley, Mowery & Silverman, 1994).

Trust can counteract such problems by increasing partners' confidence that each will not abuse the vulnerabilities of the other (Barney & Hansen, 1994; Mayer et al., 1995). As a result of faith in the intentions and fairness of the other, the partners are more likely to respect the boundaries of each other's resources and proprietary knowledge. This encourages partners to provide the substantive resources and accurate and timely information that enhance collaborative benefits (Sako, 1991; Zand, 1972). Trust is all the more advantageous when the potential for inter-partner competition is high, because it counteracts the attendant failure to cooperate.

In alliances where the potential for inter-partner competition is low, conversely, the appropriation of resources is less likely to be of strategic concern. Hence, partners' suspicions regarding each other's intents within and outside the alliance are less crippling. Thus, the benefits of interorganizational trust are lower.

> *Hypothesis 3. The positive relation between trust and alliance performance will be stronger in alliances where the potential for inter-partner competition is high than in alliances where the potential for inter-partner competition is low.*

3.1.2. Trust, Environmental Uncertainty and Alliance Performance

Environmental uncertainty results from changes in the economic conditions faced by the organization that are outside its control and hard to anticipate (Dess & Beard, 1984; Koopmans, 1957), such as instability or unpredictability in markets (Aldrich, 1979; Dess & Beard, 1984; Wholey & Brittain, 1989). Environmental uncertainty demands speedy and responsive decisions (Huber, Miller & Glick, 1990: 13; Mintzberg, 1978). This, in turn, requires organizations to engage in significant scanning of the environment in search of accurate and reliable information that would enable them to interpret and act upon the threats and opportunities facing them (Aguilar, 1967; Anderson & Paine, 1975; Hambrick, 1982).

Unpredictable changes in the environment stand to affect the performance potential of the alliance (Harrigan, 1985; Kogut, 1989). To sustain performance in an uncertain environment, alliance partners need to monitor changes and adjust the alliance's strategy accordingly, even though the conditions may be different in the parent firms themselves (Harrigan, 1985). Anderson and Paine argue that in adjusting strategy "the critical area is not uncertainty per se but the processing of accurate information to deal with uncertainty" (1975: 814). This information processing may be a bottleneck because of problems of information overload (Mintzberg, 1978; Robertson, 1980), which are exacerbated by information unfamiliarity (Park & Sheath, 1975). In highly uncertain environments, cognitive limitations may introduce considerable limitations and biases in the decision making process, by prompting the application of inappropriate rules of thumb (Barnes, 1984; Cyert & March, 1963; Schwenk, 1984).

The risk that biases enter decision-making in uncertain environments is greater in the presence of trust, especially in alliances. Scholars are beginning to recognize the heuristic quality of trust (McEvily et al., 2003; Nooteboom, 2002; Uzzi, 1997). Like cognitive heuristics (Bazerman, 1998), trust enables decision-making under conditions of uncertainty, but may also produce systematic biases that can result in significant errors (Ferrin & Dirks, 2003). Specifically, when partners trust each other, their tendency to screen for accuracy of the information provided by the other is reduced, and their inclination to accept the information at face value increases (McEvily et al., 2003; Szulanski, Cappetta & Jensen, 2004; Uzzi, 1997). Because trust makes partners

accustomed to relying on each other without doubt, each partner tends to rely more extensively on the other's knowledge of the environment when scanning the opportunities and threats faced by the alliance, while paying less attention to the completeness and veracity of the information thus obtained. Trust encourages partners to minimize redundancies in the search process by exploiting each other's purported expertise to engage in specialized search. For instance, in international alliances it is common for the local partner to scan the environment for regulatory changes or changes in consumer preferences in the local market, while the foreign partner monitors technological changes, global demand or new competition from foreign firms (Beamish & Banks, 1987); such tendencies tend to be more pronounced in the presence of trust.

Prior research has also shown that confronting alternative views and diverse information stimulates creativity and constructive criticism (Jehn, Northcraft & Neale, 1999; Simons, Pelled & Smith, 1999). Specialized search as described above, on the contrary, reduces variety in information and restricts the cross-fertilization of viewpoints required for crafting well-informed responses to the environment (Webb, 1996). In alliances, because trust functions as a simplifying heuristic that constrains cognitive effort (McEvily et al., 2003), it also stands to bias partners' efforts to scan and make sense of the environment, and thereby result in sub-optimal responses.

Trusting alliance partners may even experience 'strategic blindness', i.e., outright insensitivity to changes in the environment (McEvily et al., 2003: 97). Because partners commit resources, effort and time in the process of cultivating trust, they tend to be wary of actions that may damage the relationship (Nooteboom, 2002). For instance, if responding to environmental change would require major changes such as bringing in a new partner or ending the alliance (Harrigan, 1985), partners may be apprehensive about the eventuality of having to cultivate trust and adjust to a new partner all over again, or having to go it alone. In the presence of such apprehensions, partners tend to weigh losses resulting from responding to the environment more than the gains that might come about (Bazerman, 1998; Nooteboom, 2002). Partners may prefer 'inaction over action and status quo over any alternatives' (Kahneman & Lovallo, 1993:18) - culminating in the alliance failing to respond to demands of the environment.

Overall, interorganizational trust stands to result in inadequate response to the challenges posed by an uncertain environment because it limits cognitive efforts or even causes strategic blindness. Notwithstanding good intentions, trust may thus lead partners into making sub-optimal and slow decisions for the alliance, or even no decision at all. This places the alliance at variance with the demands of the environment. As a result, we expect that trust will dampen down alliance performance in the presence of high environmental uncertainty.

Under low environmental uncertainty, on the contrary, complete and accurate environmental scanning is less critical. Furthermore, less effort is required to adjust to the environment because of its stability and predictability. Therefore, the limiting effects of trust discussed above tend to be less relevant.

Scholars have consistently argued that hard to predict changes in the market environment create critical uncertainty for organizations (Cameron, Kim & Whetten, 1987; Delacroix & Swaminathan, 1991; Dess & Beard, 1984: 56). Many researchers have used the concept of 'instability', i.e. the degree of difference involved in each environmental change (Child, 1972), to capture environmental uncertainty (e.g., Bergh & Lawless, 1998; Keats & Hitt, 1988; Snyder & Glueck, 1982). Others have argued that instability is but one dimension of uncertainty. Unpredictability, i.e. the degree of irregularity in the overall pattern of environmental change (Child, 1972), also magnifies the consequences of a changing environment (e.g., Lawrence & Lorsch, 1973; Wholey & Brittain, 1989). Because environmental uncertainty is magnified by both instability and unpredictability (Buchko, 1994), these two distinct dimensions of market variation are both relevant to our investigation of the joint consequences of trust and environmental uncertainty. That is, we expect instability and unpredictability to each have a dampening effect on the trust-performance relationship.

> *Hypothesis 4: The positive effect of interorganizational trust on alliance performance will be weaker when market instability is high than when it is low.*

> *Hypothesis 5: The positive effect of interorganizational trust on alliance performance will be weaker when market unpredictability is high than when it is low.*

3.2. METHODS

3.2.1. Data

Data were collected through a survey of international strategic alliances operating in India. As stated above, we identified strategic alliances as extended cooperative agreements intended at the joint development, manufacture, and/or distribution of products (Gulati, 1998; Zollo, et al., 2002). In the last 15 years, India has become one of the most attractive investment locations in the world (A.T. Kearney, 2004). Strategic alliances have been a prevalent mode of entry into the Indian market, as in the rest of the world, and the number of strategic alliances in India has also risen by more than 50 percent over the past decade (Bhaumik, Beena, Bhandari & Gokarn, 2003). Furthermore, variable demand levels and shifts in the competitive landscape across industries make this a relevant empirical setting to study the role of environmental uncertainty. Thus, India provides a rich and suitable context in which to study the conditions for successful strategic alliances.

To obtain a target population of international strategic alliances, we examined Capitaline, a secondary database, and member lists of various international chambers of commerce in India. We thus identified a sample of 700 dyadic international strategic alliances operating in India. Following Parkhe (1993b) and Simonin (1999), the research was designed to aim at respondents highly knowledgeable about the alliances. The sensitive nature of the questions, and the fact that most international alliances in India are directly dealt with by the top executives, demanded that the questionnaire be filled in by managing directors or chief executive officers. These target respondents' names were identified using Capitaline and chambers of commerce data.

3.2.2. Data Collection

The questionnaires were designed and the survey implemented according to Dillman's (2000) Tailored Design Method, which suggests several ways to encourage response. The measurement items were generated through a review of prior alliance literature. We used university faculty and doctoral students to assess the content of the items to ascertain whether the items tapped into the conceptual domain of the focal construct (DeVellis, 1991). This yielded a set of fine-tuned

questionnaire items that were used in personal interviews and early pre-tests with managing directors of Indian firms involved in international strategic alliances to verify for item ambiguity. We made slight modifications to the wording of a few items as a result, and enriched one measure as described below. This process further strengthened content validity. Appendix 1 reports the survey items used in this study.

The first wave of questionnaires was sent to managing directors and senior executives of 700 Indian firms with international alliances. This was followed, four weeks later, by a second wave of survey mailings. Of the 700 managing directors and senior executives that received questionnaires, 126 responded, yielding an 18% response rate. This is comparable to recent surveys of alliance managers in other emerging economies: e.g.14.4% for China (Isobe, Makino & Montgomery, 2000), 19% for Mexico (Robins, Tallman & Lindquist, 2002). All the responses to our survey came from individuals directly responsible for the alliances: 80 came from chairpersons and managing directors of the alliances, 30 from presidents, vice presidents and general managers, and 16 from full-time directors. Nearly 75% of the respondents had been with the firm for more than five years, and of these almost 25% for more than 20 years. The alliance partners of Indian firms were spread over 21 countries. All alliances in our sample are dyadic, and all belong to industries in the manufacturing sector where alliances are more prevalent (e.g., Parkhe, 1993b; Simonin, 1999). Tests of proportions show that the distribution of our responses according to their two-digit manufacturing SIC is not statistically different from those reported in the two landmark studies by Harrigan (1988) and Ghemawat, Porter & Rawlison (1986) (chi-squares of 8.11 for 16 d.f. and 10.04 for 17 d.f., respectively). The top four industries in our sample rank in the same order as in these studies, and as others have also found (e.g. Parkhe, 1993b), are relatively high-tech (industrial machinery and equipment, chemicals and allied products, electrical and electronic equipment, and transportation equipment).

Though we obtained data for most of our moderators from archival sources, some of our key measures were collected using the same survey instrument and from a single respondent. We undertook multiple procedural and statistical remedies to address the potential concern of common method bias and single informant bias. Specifically, we undertook procedural remedies such as obtaining predictor and criterion variables from different sources, protecting respondent

anonymity, scale reordering and reducing item ambiguity. Our statistical remedies included triangulating survey data with data obtained from secondary sources and from field interviews, partial correlation adjustment, and Harman's (1967) one factor test. Appendix 2 reports details on each of these steps. Based on these we are confident that common method or single respondent bias was not a serious problem in our study.

We checked the potential for non-response bias by comparing the characteristics of the respondents to those of the targeted population sample. T-tests for the size of the firms ($p = 0.284$) and age of the local firm ($p = 0.344$) revealed no significant differences between respondent and non-respondent groups. In line with Mohr & Spekman (1994) and Poppo & Zenger (2002), we also tested for non-response bias by comparing early and late respondents. Armstrong & Overton (1977) argue that late respondents are more representative of non-respondents. We found no significant difference between early and late respondents on characteristics such as number of employees of the Indian partner ($p = 0.18$), alliance duration ($p = 0.29$) and investment size ($p = 0.51$).

3.2.3. Dependent Variable

Alliance performance. Despite numerous studies on alliance performance (e.g., Aulakh, Kotabe & Sahay, 1996; Lane, Salk & Lyles, 2001; Mohr & Spekman, 1994; Parkhe, 1993b), no consensus exists on measuring alliance performance. The hybrid structure and transitional nature of alliances (Buckley & Glaister, 2002; Olk, 2002) present unique challenges for evaluating performance and hinder the use of two common indicators of firm performance, financial profitability and survival. Most alliances do not report financial performance, which even then could be biased according to partners' accounting preferences. Survival is an imperfect indicator of success because an alliance may be successful and discontinued - e.g., because it has served its purpose – or unsuccessful and not (yet) discontinued - e.g., because the partners still hope to improve the relationship (Yan & Zeng, 1999). To circumvent such hurdles, much of the alliance performance research has relied on the manager's evaluation of alliance success (e.g., Aulakh et al., 1996; Isobe et al., 2000; Lin & Germain, 1998; Saxton, 1997). This is appropriate when the respondent represents top management (see Olk, 2002). Because the key informants in our sample are very well informed about the alliance, we are confident that it is proper to rely on

managerial evaluations of its success. Moreover, Geringer & Hebert (1991) found strong correlations between subjective and objective measures of alliance performance.

Alliance Performance is measured using a 5-item Likert scale reflecting: (1) the extent to which the local partner is satisfied with the overall performance of the alliance, (2) the extent to which the local partner perceives the foreign partner to be satisfied with the overall performance of the alliance, (3) the partners' satisfaction with respect to the attainment of goals, (4) the extent to which the local partner is satisfied with the financial performance of the alliance, and (5) the extent to which the local partner perceives its foreign partner to be satisfied with the financial performance of the alliance. With a Cronbach's alpha of 0.90, the performance scale demonstrates high reliability (DeVellis, 1991; Nunally, 1978).

3.2.4. Independent Variables

Trust. Trust is measured on a 5-item Likert scale capturing the fairness, reliability and goodwill dimensions of trust. Items are adapted from Aulakh et al. (1996) and Sako & Helper (1998). For details, see Appendix 1. The trust scale has high reliability (Cronbach's alpha=0.85).

Interdependence. Strategic rationales for forming an alliance, eight of which Gulati & Singh (1998) identified through an extensive review of the literature, capture the range of value creation motives of the partners. Based on our pre-test with Indian alliance managers, we added one item to their list: access to technology. As in Gulati & Singh (1998), we assigned the nine strategic rationales into one of the three classes of interdependencies identified by Thompson (1967): pooled, sequential and reciprocal interdependence. We classified as pooled interdependence three strategic rationales that require limited coordination: sharing costs (e.g., materials procurement), sharing production facilities and sharing financial resources. Three other strategic rationales were classified under sequential interdependence: access to financial resources, access to new markets, and access to technology; these require intermediate levels of coordination. Reciprocal interdependence included the remaining three strategic rationales, that require extensive coordination: sharing complementary technology, joint development of technology and reduction of time needed for innovation (see Gulati & Singh, 1998: 796). Interdependence is the average composite score of the strategic rationales present in the alliance

(respondents could identify more than one strategic rationale), weighted by the type of interdependence each rationale represents. We assigned ordinal weights of 3, 2 and 1 for reciprocal, sequential and pooled interdependence respectively. Degree of interdependence is thus a composite score with higher values indicating high interdependence.

$$SI_i = \frac{\sum_{j=1}^{9} w_{i,j} * SR_{i,j}}{9}$$

where SI_i = weighted composite interdependence score for alliance *i*

$w_{i,j}$ = weights reflecting the level of interdependence implied by each strategic rationale *j* in alliance *i, j* = 1,….., 9

$SR_{i,j}$ = presence of strategic rationale *j* in alliance *i*

To ensure that the weighting scheme did not affect the robustness of our findings, we ran several alternative specifications as in Gulati & Singh (1998).

Inter-partner competition. Prior empirical research classified alliances as being between potential competitors when both partners operate in the same four-digit SIC code (e.g., Johnson, Cullen, Sakano & Takenouchi, 1996; Oxley & Sampson, 2004; Park & Russo, 1996). To capture more accurately the extent of inter-partner competition present in the alliances, we refined the implied binary measure into three categories indicating different degrees of competitive overlap. We assigned a score of 2 if the alliance operates in the same four-digit SIC code as both partners and neither partner is active in any other four-digit SIC code. Because the partners are horizontally related and the alliance's activities are central to their businesses, the concerns about breeding a potential competitor are likely to be very high. We gave a score of 1 if both partners operate in the same four-digit SIC code as that of the alliance, but one or (most often) both partners are active in other four digit SIC codes as well. This indicates a horizontal relationship among partners, but with concerns about potential competition somewhat lower because the overlap is less central to the partners' businesses. Finally, we assigned a score of 0 if the partners did not operate in the same industries. This category includes pure cases where the partners are vertically related via the alliance (e.g., one partner supplies inputs for the alliance which operates in the same business as the other partner). Though the alliance might be strategic to the partners, because the partners operate in different industries, they are less likely to be potential

competitors (Harrigan, 1985). Various specification checks, including comparisons with the previous binary variable, showed our measure to be robust and to discriminate effectively between various degrees of rivalry.

Environmental instability. Although environmental instability may have various sources, we have chosen to concentrate on product market instability in our empirical analysis. The reason is that because all of our alliances operate within the same country, instability caused by other sources such as the regulatory regime is typically the same for many alliances. The dynamics of product markets, on the contrary, vary between industries, and are therefore a better source of environmental instability to test our hypotheses. Like previous research that followed the same logic, our measure captures five-year patterns of instability in the sales of each alliance's industry (Bergh & Lawless, 1998; Dess & Beard, 1984; Keats & Hitt, 1988). We regressed industry sales on year and divided the standard error of the regression slope coefficient by the mean of industry sales. Larger values indicate greater environmental instability.

Environmental unpredictability. For the reasons explained above, we concentrate on the unpredictability of product markets to gauge the effect of environmental unpredictability. Our measure captures the extent to which alliance partners can predict future trends in the product market from the recent past (Glick, Ogilvie & Miller, 1990; Wholey & Brittain, 1989). We measured unpredictability as $(1-R^2)$ of the regression of industry sales in the current year on the previous year's industry sales (e.g., Delacroix & Swaminathan, 1991).

3.2.5. Control Variables

Investment size. Because prior research suggests that the size of the investment in an alliance may affect partners' commitment to alliance operations (influencing the performance of the alliance), we controlled for investment size (Parkhe, 1993b). Consistent with prior research (Luo, 2002), we operationalized investment size based on the total amount of investment by both partners. To measure this, we used a five-point interval scale.

Cultural distance. Cultural distance could be related to alliance performance (Luo, 2002; Pothukuchi et al., 2002). Following extant literature, we measured national cultural distance by

using Kogut & Singh's (1988) index, based on Hofstede's (1980) four cultural dimensions.

Equity alliance. The governance mode within the alliance (Gulati, 1995; Oxley, 1999; Oxley & Sampson, 2004) may be indicative of the motives of the partners and have a large impact on alliance performance (Osborn & Baughn, 1990; Saxton, 1997). We coded equity alliances by a binary variable assigning a score of 1 for alliances that involved the use of equity, and 0 for non-equity alliances (e.g., Gulati, 1995; Saxton, 1997).

Alliance duration. Partners in long-lasting alliances have had enough time to develop mutual understanding and thus conflicts that tend to hamper relationship performance may be less likely (Lin & Germain, 1998; Martin, Swaminathan & Mitchell, 1998). Duration is measured by an item capturing the number of years the alliance has been in existence at the time of measurement (e.g. Kotabe, Martin & Domoto, 2003; Simonin, 1999).

Quality of information exchanged. A higher quality of information exchange may influence alliance performance and trust, irrespective of the level of uncertainty (Aulakh et al., 1996). Quality of information exchanged is measured with a 5-item scale capturing the frequency, density and openness of communication as distinguished by Gupta & Govindarajan (1991). This construct had a Cronbach's alpha of 0.81.

Position of respondent. We assigned a value of 1 if the respondent held the CEO's position or its equivalent in the firm, and 0 otherwise.

Local partner size. We controlled for the size of the local partner by using the log of the number of employees (e.g., Deeds & Rothaermel, 2003).

Industry dummies. Alliances in certain industries may systematically perform better than those in other industries due to differences in industry structure (Steensma, Tihanyi, Lyles & Dhanaraj, 2005). To control for industry differences, we used dummy variables for the major industries in our sample, based on two-digit SIC codes.

3.2.6. Analysis

Measurement analysis was conducted using LISREL's 8.3 maximum likelihood program (Joreskog & Sorbom, 1996). We performed confirmatory factor analysis using LISREL to check for convergent and discriminant validity. Our sample includes both equity and non-equity alliances. Prior research argues that managers consciously select the alliance governance mode that is likely to enhance performance (e.g., Gulati, 1995; Sampson, 2004); therefore it is likely that alliance performance depends on unobservable characteristics that determine alliance governance choices. To account for this potential endogeneity, we used Heckman's (1979) two-stage technique (see Hamilton & Nickerson, 2003; Shaver, 1998). Using this procedure, we first estimates a probit model of governance choice and generates the inverse Mills ratio. We then estimate the alliance performance model using the inverse Mills ratio from the first stage as a control variable. Incorporating the inverse Mills ratio as a correction term in the second-stage model yields unbiased estimates of the predictors of alliance performance (Greene, 1997).
We used ordinary least squares regression to examine alliance performance. Before calculating the interaction terms used to test hypotheses 2-5, the variables involved were mean centered (Aiken & West, 1991).

3.3. RESULTS

3.3.1. Reliability and Validity

All constructs display satisfactory levels of reliability, as indicated by the composite reliabilities ranging from 0.81 to 0.90 (Nunally, 1978; see the Appendix 1 for reliabilities of constructs). Convergent validity, the extent to which different attempts to measure a construct agree (Campbell & Fiske, 1959), can be judged by looking at the factor loadings. Each loading (λ) was significantly related to its underlying factor and all standardized item loadings were well above the cut-off of 0.50 (Hildebrandt, 1987), supporting convergent validity.

A series of chi-square difference tests on the factor correlations showed that discriminant validity, the extent to which a construct differs from others, is achieved among all constructs (Bagozzi, 1993; Joreskog, 1971). It is particularly important that discriminant validity be achieved between the constructs of trust and performance, as these are focal latent constructs.

We constrained the estimated correlation parameter between trust and performance to 1.0, and then performed a chi-square difference test on the values obtained for the constrained ($\chi 2$ = 180.78, df = 35, p < 0.000) and unconstrained models ($\chi 2$ = 135.19, df = 34, p < 0.000). The significant difference in chi-square ($\Delta\chi 2$ = 45.59, Δdf = 1, p < 0.000) indicates that the two constructs are not perfectly correlated and that discriminant validity is achieved (see Anderson & Gerbing, 1988). We also compared the fit indices, CFI and GFI, between the constrained and unconstrained models, and found that the difference was moderately large (ΔCFI = .11, ΔGFI = .09), again suggesting sufficient discriminant validity (e.g., Bagozzi & Yi, 1990). We carried out the same procedures for other constructs too, with similar results.

3.3.2. Tests of Hypotheses

Table 1 reports means, standard deviations and correlations for all variables. Tables 2 and 3 report the results of the first stage probit and the second stage regression models respectively. Table 2 displays results of the first-stage probit model. As predictors of whether the alliance is an equity-based venture, we included *tenure* and *position* of the respondent with the local partner firm, a dummy for *alliances formed before liberalization*, *investment size*, *cultural distance* between the partner countries, *local partner size*, *interdependence, inter-partner competition, environmental instability* and *unpredictability*. As suggested in prior research, we use *tenure of respondent* (e.g., Poppo & Zenger, 2002) and *alliance formed before liberalization* (e.g., Hamilton & Nickerson, 2003) as identifying instruments in our governance choice model. The respondent's experience with the firm proxies for firm knowledge about interorganizational relationships (Poppo & Zenger, 2002). Managers' experience with the firm is likely to influence the choice of governance mode of the alliance. This is valid as all our respondents hold positions of high responsibility. Before a major episode of liberalization in 1991, the Indian government exerted pressure on foreign firms to contribute some form of equity to the Indian economy (Balasubramanyam, 2003; Bowonder & Richardson, 2000). Hence, alliances formed before liberalization were more likely to be equity alliances, though not all were. We have no theoretical basis to expect a relationship between either of these variables and alliance performance. The choice of equity governance is negatively related to the *tenure of respondent* ($p < 0.01$) and *environmental unpredictability* ($p < 0.10$), and is positively related to *investment*

TABLE 1
Descriptive Statistics and Correlations[a]

Variable	Mean	s.d.	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Alliance performance	3.75	0.78													
2. Position of respondent	0.58	0.49	-.04												
3. Investment size	2.42	0.95	.17	-.06											
4. Cultural distance	1.86	0.42	.09	-.03	.18										
5. Local partner size	5.46	1.63	.15	-.20	.39	.23									
6. Equity alliance	0.58	0.49	.14	.03	.17	-.02	-.06								
7. Alliance duration	12.10	9.33	.18	-.19	.15	.02	.25	.09							
8. Quality of information exchanged	3.12	0.74	.49	-.07	.30	.04	.19	.34	-.06						
9. Interdependence	0.50	0.38	.11	-.03	.23	-.03	-.02	.14	-.12	.32					
10. Inter-partner competition	1.28	0.63	-.24	.15	-.06	-.18	-.22	.06	.03	-.14	.03				
11. Environmental instability	0.04	0.03	-.03	-.01	-.07	-.01	.06	.00	.01	.03	-.03	.01			
12. Environmental unpredictability	0.57	0.32	.11	-.03	-.04	-10	-.05	-.15	-.00	-.03	-.04	.11	-.19		
13. Trust	3.74	0.77	.52	-.09	.15	.01	.05	.27	.17	.43	.14	-.12	-.14	.07	
14. λ (Correction for endogeneity)	0.00	0.76	.13	.03	.00	-.05	-.00	.62	.11	.27	.00	.00	.00	-.00	.29

[a]N=126. Correlations with absolute value greater than .17 are significant at the .05 level. Means and standard deviations reported here are for raw scores.

TABLE 2
Probit Estimates For First-Stage Governance Choice Model: Equity vs. Non-equity alliances[a]

Variable	Model 1
Intercept	1.86*
	(.752)
Tenure of respondent	-.05**
	(.016)
Position of respondent	.08
	(.25)
Investment size	.39*
	(.189)
Cultural distance	-.13
	(.299)
Local partner size	-.14
	(.091)
Interdependence	1.06
	(.677)
Inter-partner competition	.02
	(.208)
Environmental instability	2.06
	(2.42)
Environmental unpredictability	-.68†
	(0.38)
Alliance formed before liberalization	.05**
	(.018)
Number of observations	126
Chi-squared	160.66***

[a] Standard errors are within parentheses. p values (two tailed): † $p < 0.100$, * $p < 0.050$, ** $p < 0.010$, *** $p < 0.001$

TABLE 3
Results of Regression Analysis: Alliance Performance as Dependent Variable[a]

Variable	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
Intercept	.58	(0.56)	-.92	(0.72)	-1.02	(0.72)	-1.06	(0.73)	-1.17	(0.75)		
Position of respondent	.07	(0.12)	.15	(0.11)	.13	(0.10)	.17	(0.11)	.15	(0.10)	.14	(0.10)
Investment size	.12	(0.11)	-.11	(0.11)	-.12	(0.11)	-.14	(0.11)	-.15	(0.11)	-.16	(0.11)
Cultural distance	.13	(0.15)	.10	(0.14)	.12	(0.14)	.07	(0.13)	.09	(0.13)	.10	(0.14)
Local partner size	-.04	(0.05)	.03	(0.05)	.04	(0.05)	.05	(0.05)	.05	(0.05)	.06	(0.05)
Equity alliance	-1.06†	(0.61)	.78	(0.81)	.91	(0.80)	.97	(0.81)	1.08	(0.81)	1.19	(0.80)
Alliance duration	.02*	(0.01)	.02*	(0.01)	.02*	(0.01)	.02*	(0.01)	.02*	(0.01)	.02*	(0.01)
Quality of information exchanged	.58***	(0.08)	.29**	(0.09)	.29**	(0.09)	.27**	(0.09)	.27**	(0.09)	.28**	(0.09)
Main Effects												
Interdependence			-.19	(0.32)	-.24	(0.31)	-.19	(0.31)	-.25	(0.32)	-.25	(0.33)
Inter-partner competition			-.22*	(0.10)	-.22*	(0.09)	-.23*	(0.09)	-.23*	(0.09)	-.23*	(0.09)
Environmental instability			.17	(1.13)	-.12	(0.89)	-.98	(1.12)	-1.03	(0.97)	-.99	(1.04)
Environmental unpredictability			.45†	(0.26)	.48†	(0.26)	.49†	(0.26)	.52†	(0.27)	.53†	(0.27)
Trust			.51***	(0.09)	.47***	(0.09)	.51***	(0.09)	.46***	(0.08)	.47***	(0.08)
Interactions												
Trust x Interdependence					.62*	(0.27)			.64*	(0.31)	.65*	(0.31)
Trust x Inter-partner competition					.30*	(0.12)			.29*	(0.11)	.30*	(0.12)
Trust x Environmental instability							-1.75†	(0.90)	-1.31†	(0.77)	-1.33†	(0.78)
Trust x Environmental unpredictability							-.43†	(0.23)	-.49*	(0.21)	-.50*	(0.20)
Industry dummies											Not Significant	
λ (Correction for endogeneity - equity alliance)	.62	(0.40)	-.57	(0.50)	-.67	(0.51)	-.71	(0.50)	-.80	(0.51)	-.81	(0.51)
R^2	0.317		0.487		0.529		0.513		0.555		0.557	
ΔR^2			0.170		0.042		0.026		0.068		0.002	
ΔF			6.80***		5.25**		3.25*		4.25**		0.16	

[a]N=126. ΔR^2 in models 3 through 5 is in comparison to R^2 in model 2. The coefficients reported are unstandardized estimates, with standard errors in parentheses. *p* values (two tailed): † $p < 0.100$, * $p < 0.050$, ** $p < 0.010$, *** $p < 0.001$

size ($p < 0.05$) and *alliance formed before liberalization* ($p < 0.01$). We included the Inverse Mills ratio from this model into the second stage model. The correction term is insignificant in the second-stage models and the results remain the same regardless of its inclusion.

We tested six regression equations for the alliance performance variable, as reported in Table 3. After including only the control variables in model 1, we introduced the main variables in model 2. We introduced the interactions of trust with behavioral and environmental uncertainty variables separately in models 3 and 4. In model 5, we included all the interaction terms simultaneously. Finally, we re-ran model 5 with industry dummies to create model 6. Model 1 is significant ($p < 0.001$), and the control variables explain 31 percent of the variance in alliance performance. *Alliance duration* ($p < 0.01$) and *quality of information exchanged* ($p < 0.001$) are positively related to alliance performance, whereas the *equity alliance* dummy is negatively related to alliance performance ($p < 0.10$) (but only in the base model).

Hypothesis 1 predicts that trust will be positively related to alliance performance. The coefficient for *trust* in Model 2 is positive and significant ($b = 0.51$, $p < 0.001$), thus supporting Hypothesis 1. Given mean centering, this coefficient shows the magnitude of the relationship between trust and alliance performance, holding other variables at their mean values.

Trust, Behavioral Uncertainty Concerns and Alliance Performance.

The incremental variance accounted for by the interactions between the behavioral uncertainty variables and trust is significant in Model 3 ($\Delta R^2 = 0.042$, $p < 0.01$). Hypothesis 2 predicts that alliances will benefit more from interorganizational trust when the degree of interdependence is higher. Hypothesis 3 predicts that alliances will benefit more from interorganizational trust when the degree of potential inter-partner competition is higher. The coefficient of the interaction of *trust* with *interdependence* is significant and positive ($b = 0.62$, $p < 0.05$ in Model 3), supporting Hypothesis 2. We also find a significant interaction between *trust* and *inter-partner competition* ($b = 0.30$, $p < 0.05$), thereby supporting Hypothesis 3. These results show that the positive impact of trust on alliance performance increases with interdependence and inter-partner competition.

To further assess the implications of the regression results, we plotted the relationship of trust and alliance performance over the observed range of trust, with separate regression lines representing different levels of interdependence. We created a similar plot with inter-partner competition. The plotted lines represent the performance values expected on the basis of un-standardized regression coefficients from the complete regression (Model 5). The *low interdependence* and *low inter-partner competition* lines indicate values one standard deviation below the mean, and the *high interdependence* and *high inter-partner competition* lines indicate values one standard deviation above the mean. Figures 1 and 2 graphically support Hypotheses 2 and 3, respectively. The simple slope test (Aiken & West, 1991) reveals that the magnitude of the slope of alliance performance regressed on trust is nearly twice as large for high interdependence (simple slope: $b = 0.57$, $t = 5.29$) as that for low interdependence (simple slope: $b = 0.32$, $t = 3.55$). The slope for high inter-partner competition (simple slope: $b = 0.66$, $t = 6.35$) is nearly thrice as large as that for low inter-partner competition (simple slope: $b = 0.26$, $t = 2.41$). These results show that the trust- performance relationship strengthens at high levels of the two variables indicating concerns about behavioral uncertainty - interdependence and inter-partner competition.

FIGURE 1
Trust, Interdependence and Alliance Performance

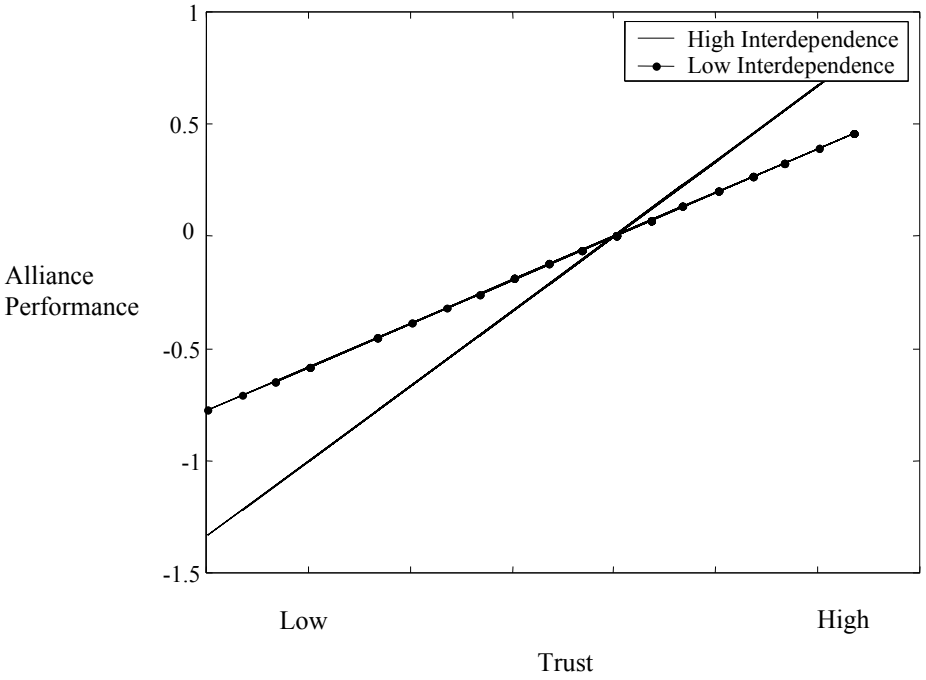
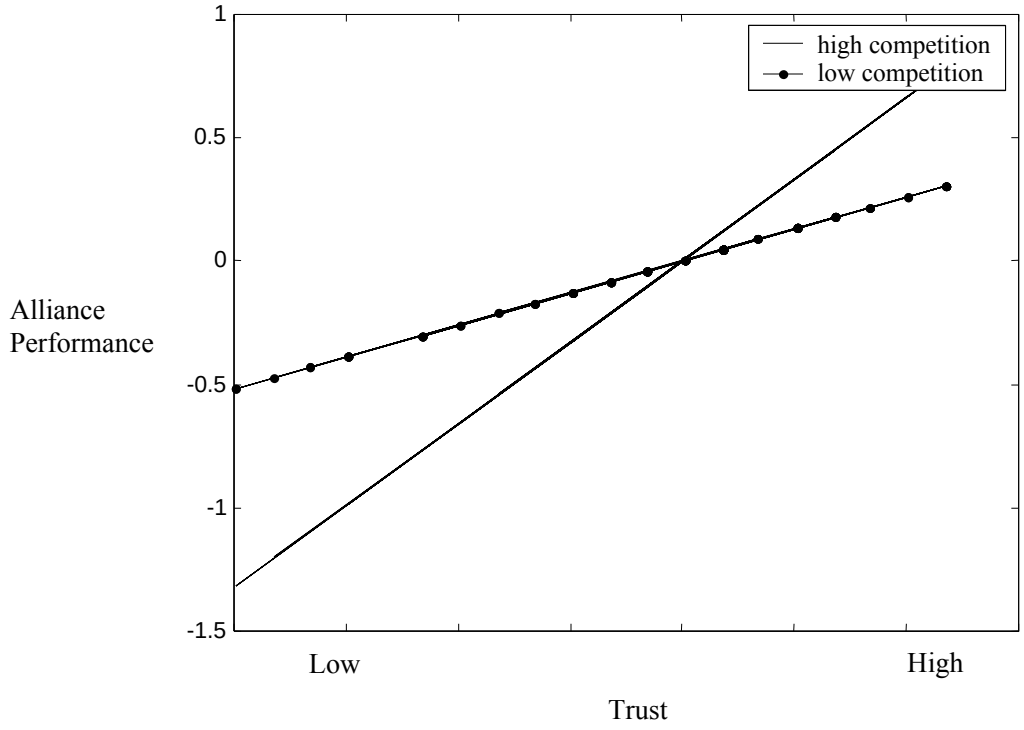


FIGURE 2

Trust, Inter-partner Competition and Alliance Performance



Trust, Environmental Uncertainty and Alliance Performance.

The additional variance accounted for by the interactions between the environmental uncertainty variables and trust is significant in Model 4 ($\Delta R^2 = 0.026$, $p < 0.05$). Hypothesis 4 predicts that the benefits that alliances derive from interorganizational trust will diminish when environmental instability is higher. Hypothesis 5 predicts that the benefits that alliances derive from interorganizational trust will diminish when environmental unpredictability is higher. Marginally significant negative effects are found for the coefficient of the interaction of *trust* with *environmental instability* in models 4 ($b = -1.75$, $p < 0.10$) and 5 ($b = -1.31$, $p < 0.10$), giving some support to Hypothesis 4. Model 4 also shows a negative interaction effect between *trust* and *environmental unpredictability* ($b = -0.43$, $p < 0.10$), as does model 5 ($b = -0.49$, $p < 0.05$), thereby supporting Hypothesis 5. These results suggest that the positive impact of trust on alliance performance diminishes with high instability and unpredictability in the environment.

To illustrate these interactions, we created plots for the trust- alliance performance relationship with separate regression lines representing different levels of environmental instability and

unpredictability one standard deviation above and below the mean. Figures 3 and 4 graphically support Hypotheses 4 and 5 respectively. The simple slope test (Aiken & West, 1991) reveals that the magnitude of the slopes of alliance performance regressed on trust is nearly twice smaller for high environmental instability (simple slope: b = 0.33, t = 3.44) as that for low environmental instability (simple slope: b = 0.59, t = 5.06). The slope for high environmental unpredictability (simple slope: b = 0.30, t = 3.1) is more than twice smaller than that for low environmental unpredictability (simple slope: b = 0.61, t = 5.75). Further probing of the interactions (Aiken & West, 1991) revealed that for very high levels of environmental unpredictability the relationship between trust and alliance performance becomes insignificant. The sign of the simple slope coefficient of trust may reverse for very high environmental unpredictability (b = -0.05, t = -0.28 at three standard deviations above the mean). These results indicate that the trust-performance relationship weakens and may disappear altogether at high levels of the environmental uncertainty variables - environmental instability and unpredictability.

FIGURE 3

Trust, Environmental Instability and Alliance Performance

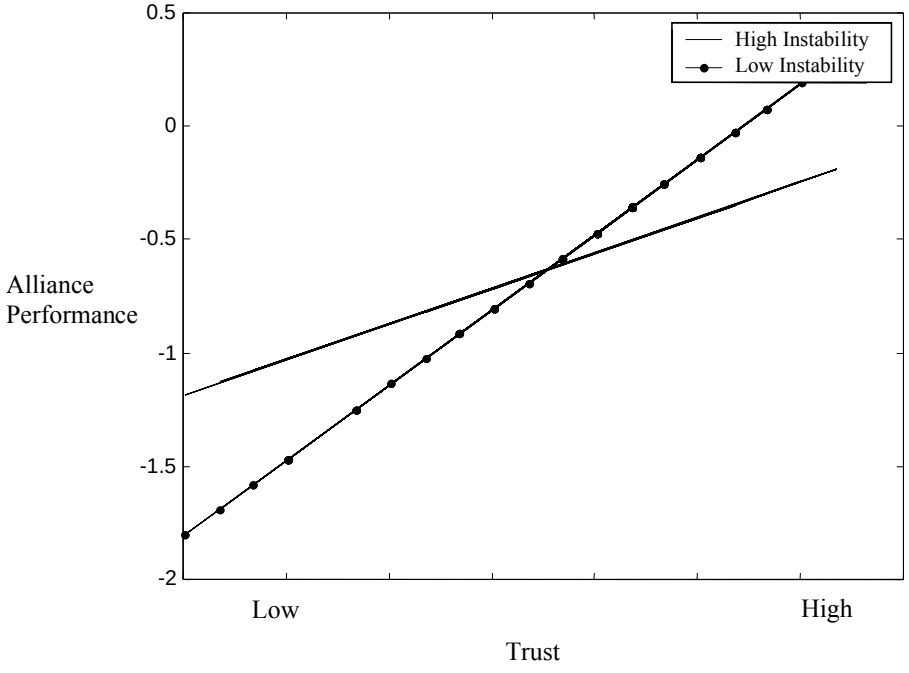
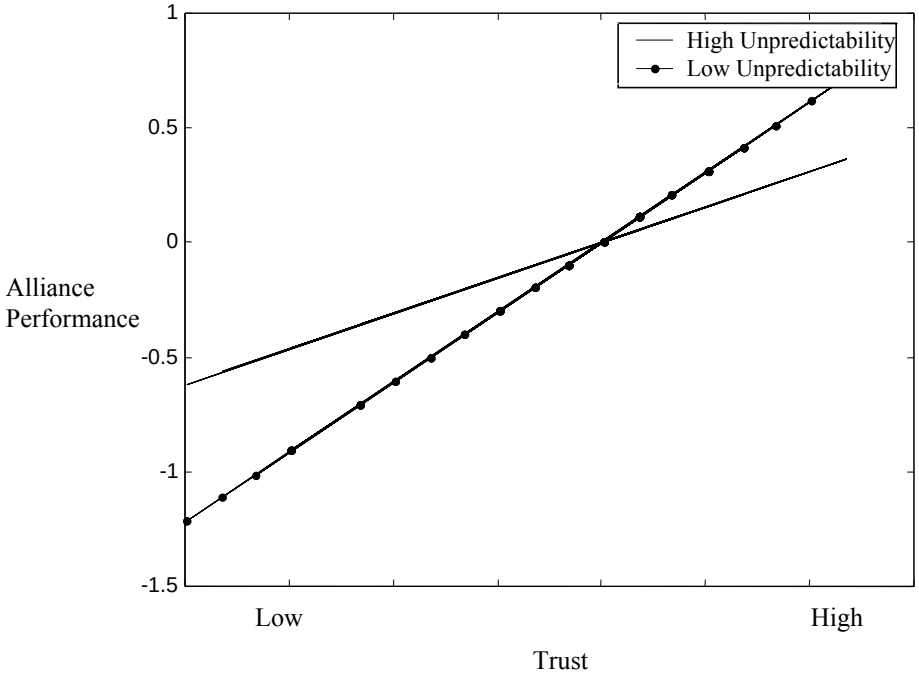


FIGURE 4

Trust, Environmental Unpredictability and Alliance Performance



In model 6, we find that the addition of fixed effects for the main sample industries does not substantially add to the explanatory power of the regression ($\Delta R^2 = 0.002$, n.s.). The industry dummies are not significant as a set ($\Delta F = 0.16$, n.s.). Furthermore, the results as reported above, including all tests of hypotheses, do not change substantially. Thus, our results appear robust across industries.

All in all, the results consistently support our argument that the positive relationship between interorganizational trust and alliance performance strengthens under conditions that foster behavioral uncertainty, but weakens severely under environmental uncertainty**.**

3.4. DISCUSSION

By now there appears to be general support for the idea that trust is beneficial to alliances.

However, recent studies have suggested that the impact of trust on alliance performance may be contingent on other factors. Yet previous research has not yielded a general theory regarding the conditions under which trust facilitates and hinders alliance performance. We have presented such a theory, based on the distinction between behavioral and environmental uncertainty, and shown empirically that, apart from the positive direct relationship between trust and alliance performance, more subtle interaction effects can be distinguished. The relationship between trust and alliance performance is moderated by the type of uncertainty prevailing, with behavioral uncertainty strengthening, and environmental uncertainty weakening, the relationship between trust and performance.

3.4.1. Contributions and Implications

We believe our research makes several contributions. First, we extend the interorganizational trust-performance literature by demonstrating that the type of uncertainty facing alliance partners conditions the relationship between trust and alliance performance. Specifically, behavioral and environmental uncertainties have opposite moderating effects on the relationship between trust and alliance performance. The quite distinct nature of the challenges posed by these two types of uncertainties brings about these differential effects. Trust essentially reduces the likelihood of negative interpretations of partner actions by allowing for the benefit of the doubt. This facilitates openness in sharing knowledge and reduces fear of mis-performance or resource mis-appropriation by partners. Hence, the benefits from trust are magnified under conditions where potential behavioral uncertainty is high. In contrast, the benefits from trust are reduced if environmental uncertainty is strong, because overconfidence in the information provided by each partner restrains the vigilant environmental scanning and cross-fertilization of views that is of vital importance under this condition. This has implications for research on trust in that it shows trust to be a double-edged sword, with a performance-enhancing potential that increases under certain conditions but decreases under other conditions.

Second, extant research suggests that potential competition and high interdependence between partners are likely to hamper alliances. Behavioral concerns such as the fear of mis-appropriation of proprietary know-how are considerable in such alliances. We contribute to this stream of research by empirically showing that trust brings about benefits by attenuating behavioral

concerns in alliances where potential inter-partner competition and interdependence are high. This underscores the potential benefits of investing in trust when behavioral concerns are considerable and also suggests that trust figures among the relational mechanisms and norms that can play an important role in facilitating alliance performance by allowing partners to realize their potential synergies (see Madhok & Tallman, 1998). Moreover, our findings underline the necessity of taking into account both operational features (e.g., interdependence) and behavioral characteristics (e.g., trust) in studying alliance success. This runs counter to the emphasis on the isolated influence of either tangible alliance features or behavioral patterns in much of prior research (Doz, 1996; Yan & Zeng, 1999). Likewise, our study shows the benefits of examining industry factors simultaneously with alliance- and partner-level effects in alliance research.

Third, the challenges posed by environmental uncertainty for firms are well documented. However, our knowledge about the role of environmental uncertainty in strategic alliance performance is limited. This is all the more relevant as environmental uncertainty is commonly advanced as a leading reason for forming alliances in the first place (e.g., Harrigan, 1988; Pfeffer & Nowak, 1976). Because alliances involve the interests of more than one firm, relational norms such as trust also shape the manner in which partners respond to various external challenges. Therefore it is vital for alliance research to understand the role of trust in shaping responses to the challenges posed by environmental uncertainty, and the implications of this for performance. Prior research, for the most part, stresses the beneficial effects of trust. However, our study shows that trust tends to dampen down the performance of alliances facing high environmental uncertainty. The sense of cognitive comfort provided by trust may reduce the alertness and cross-fertilization needed in the presence of strong environmental uncertainty. Hence, alliance partners should exercise caution in depending on inter-organizational trust, and accelerate scanning and search efforts under environmental uncertainty rather than relying unduly on each other for this. Thus, our study adds to the research agenda on the limits of trust (e.g., McEvily et al, 2003).

As for relevance to practice, we have established that successful international alliances take into account the differential impact of trust, depending on the type of uncertainty. Because the intentional cultivation of interorganizational trust involves costs as well as opportunities forgone (Poppo & Zenger, 2002; Sako, 1991), such an effort should be undertaken only when the

expected pay-off is positive. Our results reveal that at very high levels of environmental unpredictability the trust- performance relationship disappears and possibly reverses. The costs of cultivating trust might thus outweigh the expected benefits. Hence, firms ought to expend efforts in developing interorganizational trust specifically when it has the potential to help address behavioral uncertainty (in the presence of high interdependence and/or latent competition among partners), and exercise caution when trusting each other under conditions of strong environmental uncertainty (as caused by product market instability or unpredictability).

3.4.2. Limitations and Suggestions for Future Research

This study has some limitations. First, we collected data concerning perspectives of both partners on the alliance through a survey of the Indian partners only. Geringer & Hebert (1991: 252, 256) found a significant positive correlation between a focal parent's satisfaction with alliance performance and the perception by the other partner of this focal parent's satisfaction. However, it would be valuable to gain both partners' perspectives on the alliance. Yet, gathering such information could be very challenging, especially with parent firms originating from many countries, as is the case in our sample (21 partner countries). Second, the trust-performance relationship may be reciprocal. The cross-sectional nature of our data does not allow us to establish causality. However, it is difficult to imagine reverse causality in the presence of significant interaction terms. Hence, we believe reverse causality is not a serious concern in our study.

Third, the operationalization of our moderating constructs, behavioral and environmental uncertainty, does not preclude other sources. We do believe that interdependence and inter-partner competition are key aspects of behavioral uncertainty (Das & Teng, 2000; Park & Ungson, 2001), though there may be others. Likewise, product market instability and unpredictability are critical sources of environmental uncertainty, and perhaps its most commonly used indicators in organizational research (e.g. Buchko, 1994; Delacroix & Swaminathan, 1991; Glick et al., 1990; Wholey & Brittain, 1989). Nevertheless, uncertainty stemming from regulatory and political instability may be expected to also matter in the case of alliances located in various transition economies (e.g. Delios & Henisz, 2003). However, as the

alliances we studied were all located within a single country and the data were cross-sectional, we could not test for these effects.

Our study suggests a number of interesting opportunities for future research. First, our approach to the study of trust may be generalized beyond interfirm alliances. For instance, trust has been suggested to benefit knowledge sharing in *intra*-organizational contexts too (e.g. Makino & Inkpen, 2003; Tsai & Ghoshal, 1998). It would be interesting to explore to what extent the moderating effects of behavioral and environmental uncertainty can also be found in the intra-organizational context. Our reasoning suggests that under conditions of strong environmental uncertainty, high intra-organizational trust may lead to the same dampening effects we found in the inter-organizational context. Relatedly, our results on environmental uncertainty and trust may have implications for research on team performance. Langfred (2004) has shown that teams that depend on trust are less likely to monitor their team members. Future research could examine the implications of reliance on trust for performance of teams operating under different levels of environmental uncertainty.

Second, concerns about appropriation of proprietary knowledge and related behavioral concerns such as honest and complete sharing of information are salient in knowledge intensive alliances. It has been argued that trust enables firms to cooperate despite such concerns (e.g. Dyer & Chu, 2003). Nevertheless, in knowledge-intensive contexts such as R&D and new product development, environmental uncertainty may be high – and occur alongside behavioral uncertainty in the case of allied firms (Harrigan, 1988; Martin & Salomon, 2003). Research examining such contexts could yield further insights into the conditions under which the net benefits of trust can be sustained.

Third, we examined the impact of trust on alliance performance. Other relational mechanisms and norms may have similar contingent effects on alliance performance. For instance, Parkhe argued that tension within alliances may also result from factors other than behavioral uncertainty, such as cultural differences (Parkhe, 1991). Parkhe (1991) suggests that routines such as training – rather than trust – may go a long way towards reducing cultural conflict and improving alliance performance. Moreover, relational governance may involve “norms of

flexibility, solidarity, bilateralism and continuance" (Poppo & Zenger, 2002: 712), which can be operative in the presence of uncertainty. Further research exploring such alternatives and complements to trust, then, would be well warranted.[4] Partner reputation, especially when amplified through a network of alliances, can have potent effects too (Gulati, 1998). Finally, prior ties between partners are a potent source of shared understanding (Zollo et al., 2002) whose role deserves attention alongside trust.

3.4.3. Conclusion

Our research provides significant insights into the advantages and limitations of inter-organizational trust for strategic alliances. Specifically, the study underscores the need to move beyond the direct link between trust and alliance performance in order to understand the conditions under which trust promotes or inhibits alliance performance. Researchers (and managers) ought to take into account the type of uncertainty facing the alliance partners, that is, whether the source of uncertainty is internal or external to the alliance. In our study, the type of uncertainty moderates the relationship between trust and alliance performance, such that the trust-alliance performance relationship strengthens under behavioral uncertainty and weakens under environmental uncertainty. We hope that our study may serve as a trigger for future studies that look in more detail at the complicated and contingent role of trust in inter and intra - organizational relationships.

[4] It should be noted that distinguishing trust from alternative norms is not straightforward. Thus Gibson & Birkinshaw (2004), examining intra-organizational functioning, found that nine items meant to measure "support" and "trust" (Ghoshal & Bartlett, 1994) loaded onto a single factor ($\alpha = .93$). Still, we believe that further scale development can yield finer differentiations to support the type of research suggested here.

CHAPTER 4

THE ROLE OF FORMAL AND INFORMAL ALLIANCE CHARACTERISTICS IN THE CULTIVATION OF DIFFERENT TYPES OF INTERORGANIZATIONAL TRUST

Research examining alliances have in many cases followed the transaction cost tradition of treating strategic alliances as discrete exchanges falling between the extremes of market and hierarchy (e.g., Pisano, 1989; Hennart, 1988; Balakrishnan & Koza, 1993). In contrast, relational theorists (Axelrod, 1984; Heide &Miner,1992; MacNeil, 1980) emphasize the relational and ongoing nature of alliances, shaped by partner interaction. Alliances in this view are a distinct form characterized by reciprocity and trust; where trust between partners in an alliance exhibits the characteristics of an intangible relational asset (Powell, 1990; Sako, 1991: 455).

Scholars have recognized that the existence of trust between partners cannot be taken for granted; partners in a relationship might have to consciously cultivate and mutually own this intangible relational asset (Sako, 1991). Consequently, researchers have focused their attention towards the determinants of interorganization trust (e.g., Sako & Helper, 1998; Dyer & Chu, 2000). Research has identified formal and informal mechanisms of cultivating trust; the prominent among formal mechanisms being safeguards (Gulati, 1998) and that among informal mechanisms being information exchange (Sako, 1991).

Prior research that adopts a TCE lens in studying the structuring of alliances stresses the importance of crafting contracts covering as many contingencies as possible (Pisano, 1989), since these would safeguard the partners against opportunistic behavior arising from poor monitoring and control possibilities quintessential of alliances (Balakrishnan & Koza, 1993). The relational theorists, on the other hand, have highlighted the vital role played by information exchange in the cultivation of trust (Aulakh et al., 1996; Dyer & Chu, 2000; Sako & Helper, 1998). Sako (1991) reveals that alliance partners in Japan create trust through frequent and intense communication that sometimes extends beyond what is required by current business.

Prior studies have enhanced our understanding of the formal (sanctions and safeguards) and informal (information exchange) determinants of interorganizational trust. However, the type of trust produced by sanctions and mutual hostages and trust produced by information exchange might be different. Moreover, scholars have established the threats to a relationship due to uncertainty-behavioral and environmental (Williamson, 1991; Park & Ungson, 2001). The manner in which the formal and informal determinants operate under uncertainty might have important implications for trust cultivation. Hence, it is vital to examine whether these formal and informal determinants facilitate or hamper trust cultivation under the two types of uncertainty. Building on prior research, we distinguish between two types of trust, fragile and resilient (Ring, 1996; Barney & Hansen, 1994; Rousseau et al, 1998).

In this paper, we argue that the greater incentive alignment and administrative control mechanisms in equity alliances are likely to produce fragile trust, where partners in a relationship cooperate because it is in their private interest to do so (Ring, 1996). The quality of information exchanged between partners, on the other hand, is likely to produce resilient trust, which is based on the goodwill between partners. We shall explain the distinction between the two types of trust in greater detail later in the paper. Regarding the conditions under which these formal and informal determinants produce trust, we further argue that the relationship between equity alliances and fragile trust strengthens under behavioral uncertainty, and weakens under environmental uncertainty. The relationship between the quality of information exchanged and resilient trust strengthens under both behavioral uncertainty and environmental uncertainty.

The paper is organized as follows. Firstly, we develop our theory and hypotheses. After this we describe the data and methodology, followed by the presentation of results. Finally we discuss the findings and draw conclusions.

4.1. THEORY AND HYPOTHESES

4.1.1. Interorganizational Trust

The concept of trust has received ample attention from various disciplines, and although diverse

interpretations of trust have been put forward in prior research, a common core emerges. Building on this prior research, we define interorganizational trust as the expectation held by one firm that another would not exploit its vulnerabilities when faced with the opportunity to do so (Barney & Hansen, 1994; Mayer, Davis & Schoorman, 1995; Sako, 1991). Furthermore, building on Ring (1996) we distinguish between two distinct types of interorganizational trust-fragile trust and resilient trust.

We define fragile trust as "a type [of trust] that permits economic actors to deal with each other, but in guarded ways" (Ring 1996: 152). Prior research has referred to this form of trust variously as situational trust (Noorderhaven, 1996), weak form trust (Barney & Hansen, 1994) and deterrence based trust (Rousseau et al, 1998). Fragile trust derived from sanctions and hostages can break down if expectations are not met by trusting parties.

We define resilient trust as a type of trust that extends beyond fragile trust in that partners commit themselves and contribute to the relationship beyond what was explicitly guaranteed (Sako, 1991: 453; Ring, 1996). Such a trust exists when parties (1) demonstrate reliability by carrying out their promises; (2) act fairly when dealing with each other; and (3) exhibit goodwill when unforeseen contingencies arise. Our definition thus bases resilient trust on three related components: reliability, fairness and goodwill (Dyer & Chu, 2003). Resilient trust is also referred to by scholars as relational trust (Rousseau et al., 1998) and goodwill trust (Sako, 1991). Resilient trust stands to be relevant in situations where firms make substantial and open commitments to a partnership and "will also survive the occasional fall from grace of A in the eyes of economic actor B" (Ring 1996: 156).

4.1.2. Governance Structure and Fragile Trust

The governance structure of an alliance refers to the formal contractual and ownership structure (Gulati & Singh, 1998), which may vary in terms of inherent attributes such as incentive intensity and administrative controls (Williamson, 1991). Below, we discuss how these two governance attributes - incentive intensity and administrative controls - vary across alliance governance structures and the manner in which these attributes contribute to safeguarding the alliances against concerns about opportunism.

At one end we find non-equity alliances with minimal administrative controls built into them and at the other end are equity alliances or joint ventures, where partners share ownership with greater hierarchical controls built into them (Gulati, 1998; Pisano 1989; Gulati, 1995). Equity ownership by partners alleviates appropriation concerns through greater incentive alignment and administrative control mechanisms (Williamson, 1999). The private incentives of the partners, who invested their equity in an alliance, are more closely aligned, due to the "mutual hostage" situation. Because the incentives are not aligned to the same extent as in the case of internalization under a single hierarchy, alliance partners additionally introduce administrative control mechanisms to attenuate the incentive intensity, that is, the maximization of individual partner interests at the expense of the alliance (Oxley, 1997).

Greater incentive alignment in equity alliances or joint ventures attenuates partners' incentives to defect, thereby curbing opportunistic behavior of partners. Partners refrain from behaving opportunistically because the built in sanctions are likely to penalize them otherwise. In other words, partners behave in a trustworthy manner because it serves their economic interests. Hence, mutual hostage present in equity alliances will produce fragile trust, in that the fear of sanctions prevents partners from behaving opportunistically and abstention from opportunistic behavior lasts only as far as it yields private economic benefits (Rousseau et al., 1998). Hence, the incentive alignment mechanisms built in equity alliances are conducive to the cultivation of fragile trust.

Hypothesis 1: Equity alliances are likely to be characterized by fragile trust.

However, mutual hostages present in equity alliances are less likely to produce resilient trust as this type of trust involves suspension of calculativeness (Dyer & Chu, 2000). Inkpen & Currall (2004) even argued that extensive use of formal control mechanisms might hold back the development of trust. Development of resilient trust demands an investment in informal communication mechanisms that extends beyond formal sanctions.

4.1.3. Quality of Information Exchanged and Resilient Trust

Quality of information exchanged is defined as the frequency, density and openness of

communication (Gupta & Govindarajan, 1991). Frequency and density refers to the regularity with which partners meet each other; openness, to the extent of sensitive and relevant information shared between the partners. The quality of information exchanged between partners reflects both the openness of communication and the spatial characteristics of the interaction processes, viz., how much of the interaction between the partners has the form of face-to-face contacts. Thus, the quality of information exchanged refers to the level of communication, and the degree of whole person involvement (Dyer & Chu, 2000; Noorderhaven, 1996; Parkhe, 1993b). Prior research has shown that information exchange plays a vital role in the cultivation of interorganizational trust (Aulakh et al., 1996; Dyer & Chu, 2000; Sako & Helper, 1998). Sako (1991) reveals that alliance partners in Japan engage in frequent and intense communication that sometimes extends beyond what is required by current business.

High quality of information exchange reduces potential for opportunistic behavior of partners as well as enables the nurturing of well-developed routines between partners. Frequency and density of communication between partners develops routines needed for information processing and co-ordination of activities between partners. Such routinized behavioral patterns assist in attenuating the misunderstanding and conflicts arising out of the differences in the operating procedures of each partner organization (Zollo et al, 2002). The speed with which partners open up to each other their actions concerning the alliance and share sensitive information reduces concerns about opportunistic partner behavior (Parkhe, 1993b). Such openness of communication between partners assists in aligning expectations and perceptions about each other's behavior (Aulakh et al, 1996). Thus, high quality of information exchange, through intense and open communication between partners assists in the crafting of well-developed routines and attenuates opportunistic concerns. This, in turn, promotes resilient trust.
Hence,

Hypothesis 2: The quality of information exchanged is positively related to resilient trust.

4.1.4. Moderating Effects of Behavioral Uncertainty

Concern about partner behavior is a predominant source of internal tension in strategic alliances (Parkhe, 1993b; Park & Ungson, 2001; Sutcliffe & Zaheer, 1998). Behavioral uncertainty

concerns (henceforth 'behavioral uncertainty', in short) refer to alliance (or transaction) partners' concerns about their inability to accurately predict each other's actions in the relationship, particularly in view of the possibility of intentional or unintentional harm resulting from such actions (Nooteboom, 2002; Williamson, 1985). Behavioral uncertainty arises from possibilities such as poor performance or withholding of information by an alliance partner (Parkhe, 1993b; Sutcliffe & Zaheer, 1998), or the attempts by one partner to opportunistically appropriate the other's valuable resources (Hamel, 1991; Khanna, Gulati & Nohria, 1998).

Although behavioral uncertainty is never completely absent, its magnitude varies across alliances. Such concerns are exacerbated in alliances with two characteristics (Das & Teng, 2000; Park & Ungson, 2001): those in which contributions of the partners are highly intertwined (Nooteboom, 2002; Stinchcombe, 1985), i.e. in alliances involving high interdependence between partners (Park & Russo, 1996); or those where each partner is likely to further private interests at the expense of collaborative interests (Khanna et al., 1998; Park & Ungson, 2001), most prominently in alliances between potential competitors (Bleeke & Ernst, 1993; Hamel, 1991; Kogut, 1988; Oxley & Sampson, 2004; Park & Russo, 1996).

Interdependence. The degree of interdependence in an alliance increases with the importance and extent of the resources shared between partners and with the resulting overlap in division of labor between them (Gulati & Singh, 1998; Kumar & Seth, 1998; Thompson, 1967). Alliances that are set up to share production facilities typically create only weak interdependencies (Gulati & Singh, 1998). Resource allocations and role assignments in these partnerships tend to be straightforward and stable, and the division of labor is thus likely to be simple. In contrast, alliances formed for joint development of new technology or to speed up innovation lead to high interdependence (Park & Russo, 1996). These alliances are characterized by substantial overlap between the partners' responsibilities, and involve ongoing mutual adjustment between partners (Gulati & Singh, 1998).

In high-interdependence alliances, the closely intertwined partner contributions and the characteristics of the resources involved work together to render the coordination of tasks between partners and the devising of integrative mechanisms highly difficult (Park & Russo,

1996; Stinchcombe, 1985). These alliances involve valuable knowledge-intensive resources (Kumar & Seth, 1998; Nooteboom, 2002; Park & Russo, 1996; Park & Ungson, 2001). Because the resources are knowledge-intensive and the contributions of partners highly intertwined, even an unintentional mistake by one of the partners in managing the resources or in performing its tasks can have severe consequences for the other partner (Nooteboom, 2002).

The highly intertwined contributions of partners in high interdependence alliances make it difficult to ascertain whether partners are contributing fairly to the alliance. The greater incentive alignment in equity alliances provides partners the confidence that each will be more forthcoming with the sharing of information and the confidence that each will not violate the terms of the contract. The greater administrative control mechanisms allow partners to introduce monitoring mechanisms to ensure that they are contributing fairly to the alliance. Thus, under high interdependence, equity alliances facilitate the development of fragile trust.

> *Hypothesis 3: The positive relationship between equity alliances and fragile trust will be stronger under high interdependence between partners.*

The quality of information exchanged between partners plays a vital role in promoting extensive co-ordination between partners (Galbraith, 1977; Larson, 1992). Frequent and dense communication between partners contributes to the development of routines. This, in turn minimizes mistakes arising from the inability to understand each other's operating procedures. The openness of communication between partners improves the faith in each other's behavior. Therefore, the socialization and communication between partners improves the resilient trust between partners.

> *Hypothesis 4. The positive relation between the quality of information exchanged between partners and resilient trust will be stronger in alliances with a high degree of interdependence between partners.*

Inter-partner competition. Inter-partner competition exists when a partner tries to maximize its private interests at the expense of the alliance or the other partner (Baum, Calabrese & Silverman, 2000; Park & Russo, 1996; Park & Ungson, 2001). In alliances formed between potential competitors, concerns about opportunistic exploitation loom especially large, in that partners may have strong incentives to appropriate each other's resources (Khanna et al., 1998; Oxley & Sampson, 2004). Prior research has shown that alliances between potential competitors engender greater tendencies of partners to engage in such 'de-facto internalization' (Baum et al., 2000; Hamel, 1991: 84). Moreover, because potential competitors are familiar with the areas that their partner operates in, they have superior capacity to absorb and reuse proprietary knowledge (Cohen & Levinthal, 1990; Park & Russo, 1996). Hence, interpartner competition is likely to hamper the cultivation of trust.

Equity alliances can counteract such problems through greater incentive alignment. Because opportunistic behavior by any partner is likely to be penalized, partners' fear of opportunistic exploitation through breach of contract is likely to be less. Equity alliances encourage potential competitors to craft safeguards covering as many contingencies as possible. Moreover, greater monitoring mechanisms in equity alliances enable partners to protect their proprietary assets. Thus, equity alliances cultivate in a partner the trust that the other will not breach the terms of the contract.

> *Hypothesis 5: The positive relationship between equity alliances and fragile trust will be stronger under high inter-partner competition.*

High quality of information exchange encourages partners to craft well-developed routines and facilitate the open sharing of valuable information between partners. The frequent, dense and open communication assists in developing attachment and open commitment between partners by way of developing fairness and reliability in behavior. Moreover, because high quality of information exchange encourages both partners to share their proprietary information, both partners are likely to possess each other's sensitive information; hence partners will hesitate to use such information against each other. However, we can also argue that intense and open communication can prove to be counter productive in that competitors might use such sensitive

information to their own advantage when a fitting opportunity presents itself. Hence, high quality of information exchanged between partners might even reduce partners' resilient trust in each other. Following the above arguments we present the two contrasting hypotheses below:

Hypothesis 6a: The positive relationship between the quality of information exchanged between partners and resilient trust will be weaker under high inter-partner competition.

Hypothesis 6b: The positive relationship between the quality of information exchanged between partners and resilient trust will be stronger under high inter-partner competition.

4.1.5. Moderating Effects of Environmental Uncertainty

Environmental uncertainty results from changes in the economic conditions faced by the organization that are outside its control and hard to anticipate (Dess & Beard, 1984; Koopmans, 1957). Environmental uncertainty demands speedy and responsive decisions (Huber, Miller & Glick, 1990: 13; Mintzberg, 1978). This, in turn, requires organizations to engage in significant scanning of the environment in search of accurate and reliable information that would enable them to interpret and act upon the threats and opportunities facing them (Aguilar, 1967; Anderson & Paine, 1975; Hambrick, 1982).

In an uncertain environment, alliance partners need to monitor changes and adjust the alliance's strategy accordingly, even though the conditions may be different in the parent firms themselves (Harrigan, 1985). Anderson and Paine argue that in adjusting strategy "the critical area is not uncertainty per se but the processing of accurate information to deal with uncertainty" (1975: 814). This information processing may be a bottleneck because of problems of information overload (Mintzberg, 1978; Robertson, 1980), which are exacerbated by information unfamiliarity (Park & Sheath, 1975).

Equity alliances involve greater monitoring and standard operating procedures and partners expect each other to fulfill their obligations. That is, partners expect each other to contribute appropriately toward enhancing alliance performance. However, the knowledge of the

environment will be far from perfect due to information unfamiliarity and overload. Hence, partners might find it difficult to meet the greater expectations associated with equity alliances. As either of the parties fail to derive the expected benefit from the alliance, they tend to interpret it as a failure of a partner to contribute adequately rather than attributing it to the uncertainty in the environment, thereby impeding the cultivation of trust.

Hypothesis 7: The positive relationship between equity alliances and fragile trust will be weaker under high environmental uncertainty.

High quality of information exchange is highly essential under environmental uncertainty. The intensity and openness of communication between partners allows greater and fine-grained information exchange regarding changes in the environment (Uzzi, 1997). This, in turn, eases the information processing demands on the partners. Moreover, such intense and open communication is likely to encourage partners to accept information from each other without doubt and at face value. Thus, high quality of information exchange improves resilient trust under high environmental uncertainty.

Hypothesis 8: The positive relationship between the quality of information exchanged between partners and resilient trust will be stronger under high environmental uncertainty.

4.2. METHODS

4.2.1. Data and Data Collection

Chapter 3 and 4 are based on the same survey data. Chapter 3 provides details on data collection extensively. Hence, the details on data and data collection are not repeated here.

4.2.3. Dependent Variables

Resilient Trust. Resilient trust is measured on a 5-item Likert scale capturing the fairness, reliability and goodwill dimensions of trust. Items are adapted from Aulakh et al. (1996) and

Sako & Helper (1998). For details on all items used in scales, see Appendix 1. The resilient trust scale has high reliability (Cronbach's alpha=0.85).

Fragile Trust. Fragile trust is measured on a 3-item Likert scale capturing the extent to which a partner trusts that the other will faithfully carry out its obligations toward the relationship. Items are adapted from Sako & Helper (1998). The fragile trust scale exhibited a high Cronbach's alpha of 0.82.

4.2.4. Independent Variables

Quality of information exchanged. Quality of information exchanged is measured with a 5-item scale capturing the frequency, density and openness of communication as distinguished by Gupta & Govindarajan (1991). This construct had a Cronbach's alpha of 0.81.

Equity alliance. We coded equity alliances by a binary variable assigning a score of 1 for alliances that involved the use of equity, and 0 for non-equity alliances (e.g., Gulati, 1995; Saxton, 1997).

Interdependence, inter-partner competition and *environmental uncertainty* are the other independent variables in this study. The details on operationalization of these three variables are provided in Chapter 3.

4.2.5. Control Variables

Investment size. We operationalized investment size based on the total amount of investment by both partners. To measure this, we used a five-point interval scale.

Country of origin. We included dummies for partners originating from Europe and Asia with North America being the reference category.

Alliance duration. Partners in long-lasting alliances have had enough time to develop mutual understanding and is likely to be conducive to the development of trust (Parkhe, 1998). Duration

is measured by an item capturing the number of years the alliance has been in existence at the time of measurement (e.g. Simonin, 1999).

***Local partner size*.** We controlled for the size of the local partner by using the log of the number of employees (e.g., Deeds & Rothaermel, 2003).

Procedural justice. Higher procedural justice might not only improve the trust between partners but the realization that a partner has been just in its dealings with the other might result in open sharing of sensitive information between partners. Hence, procedural justice can be expected to be empirically related, while conceptually distinct from trust. Therefore we controlled for procedural justice in order to partial out its effect. Procedural justice is measured using a 4-item scale that captures the engagement, explanation and clarity of explanation as distinguished by Kim and Mauborgne (1998). Convergent validity was established as item loadings (λ) were significantly related to the underlying factor with the lowest t-value being 5.41 and the lowest squared multiple correlations being 0.44. This variable exhibited a high Cronbach's alpha (0.81).

4.2.6. Analysis

Measurement analysis was conducted using LISREL's 8.3 maximum likelihood program (Joreskog & Sorbom, 1996). We performed confirmatory factor analysis using LISREL to check for convergent and discriminant validity. We used ordinary least squares regression to examine alliance performance. Before calculating the interaction terms used to test hypotheses 3-8, the variables involved were mean centered (Aiken & West, 1991).

4.3. RESULTS

4.3.1. Reliability and Validity

All constructs display satisfactory levels of reliability, as indicated by the composite reliabilities ranging from 0.81 to 0.90 (Nunally, 1978; see the Appendix 1 for reliabilities of constructs). Convergent validity, the extent to which different attempts to measure a construct agree (Campbell & Fiske, 1959), can be judged by looking at the factor loadings. Each loading (λ) was significantly related to its underlying factor and all standardized item loadings were well above

the cut-off of 0.50 (Hildebrandt, 1987), supporting convergent validity. A series of chi-square difference tests on the factor correlations showed that discriminant validity, the extent to which a construct differs from others, is achieved among all constructs (Bagozzi, 1993; Joreskog, 1971).

4.3.2. Tests of Hypotheses

Table 1 reports means, standard deviations and correlations for all variables. Table 2 reports the results of the OLS regression model. We tested three regression equations each for the fragile and resilient trust variables, as reported in Table 2. For each type of trust, after including only the control variables in model 1, we introduced the main variables in model 2. We introduced the interaction terms in model 3. Model 1 for fragile and resilient trust is significant ($p < 0.001$), and the control variables explain 24 percent of the variance in fragile trust and 23 percent of the variance in resilient trust. Procedural justice ($p < 0.001$) is positively related to both fragile and resilient trust; whereas Alliance duration ($p < 0.01$) is positively related to resilient trust it is not significantly related to fragile trust. This might suggest that whereas resilient trust improves with the duration of the alliance, fragile trust does not.

Hypothesis 1 predicts that equity alliance will be positively related to fragile trust. The coefficient for equity alliance in Model 2 with fragile trust as the dependent variable is not significant ($b = 0.13$, $p =$ n.s), thus rejecting Hypothesis 1. Hypothesis 2 predicts that quality of information exchanged between partners will be positively related to resilient trust. The coefficient for quality of information exchanged in Model 2 with resilient trust as the dependent variable is positive and significant ($b = 0.12$, $p < 0.05$), thus supporting Hypothesis 2. Given mean centering, this coefficient shows the magnitude of the relationship between quality of information exchanged and resilient trust, holding other variables at their mean values.

Equity Alliance, Uncertainty and Fragile Trust

The incremental variance accounted for by the interactions between the behavioral and environmental uncertainty variables and equity alliance is significant in Model 3 ($\Delta R^2 = 0.041$, $p < 0.10$). Hypothesis 3 predicts that the positive relationship between equity alliances and fragile

TABLE 1
Descriptive Statistics and Correlations[a]

Variable	Mean	s.d.	1	2	3	4	5	6	7	8	9	10	11	12
1. Resilient trust	3.74	0.77												
2. Fragile trust	3.90	0.84	.61											
3. Investment size	2.42	0.95	.16	.07										
4. Europe	0.58	0.49	-.11	-.11	-.08									
5. Asia	0.21	0.41	.03	.02	.02	-.59								
6. Local partner size	5.46	1.63	.05	.08	.39	-.18	.21							
7. Procedural justice	3.05	1.00	.43	.45	.10	-.05	.03	.07						
8. Alliance duration	12.10	9.33	.15	-.02	.15	.09	-.12	.25	-.06					
9. Equity Alliance	0.58	0.49	.27	.23	.17	.15	-.12	-.06	.23	.09				
10. Quality of information exchanged	3.12	0.74	.50	.51	.29	-.07	.08	.19	.45	-.06	.35			
11. Interdependence	0.50	0.38	.15	.08	.23	-.13	.12	-.06	.15	-.12	.15	.32		
12. Inter-partner competition	1.28	0.63	-.12	-.22	-.06	.21	-.20	-.19	-.09	.03	.06	-.15	.03	
13. Environmental uncertainty	0.57	0.32	.07	.15	-.02	-.05	-.08	-.05	.19	.02	-.14	-.02	-.01	.13

[a]N=126. Correlations with absolute value greater than .17 are significant at the .05 level. Means and standard deviations reported here are for raw scores.

TABLE 2
Results of Regression Analysis[a]

	Dependent Variable: Fragile Trust			Dependent Variable: Resilient Trust		
Variable	**Model 1**	**Model 2**	**Model 3**	**Model 1**	**Model 2**	**Model 3**
Intercept	3.24***(0.31)	3.24***(0.31)	3.08***(0.32)	3.28***(0.31)	3.08***(0.31)	3.04***(0.31)
Europe	-.16 (0.12)	-.18 (0.12)	-.18 (0.12)	-.15 (0.12)	-.15 (0.12)	-.15 (0.12)
Asia	-.20 (0.15)	-.20 (0.14)	-.21 (0.14)	-.05 (0.16)	-.04 (0.15)	-.01 (0.15)
Local partner size	.02 (0.03)	-.002 (0.03)	-.001 (0.04)	-.02 (0.03)	-.03 (0.03)	-.03 (0.03)
Investment size	-.01 (0.04)	-.03 (0.04)	-.03 (0.04)	.03 (0.05)	-.01 (0.05)	-.01 (0.05)
Alliance duration	-.001 (0.01)	-.003 (0.01)	-.003 (0.01)	-.009* (0.004)	-.01* (0.004)	-.01* (0.004)
Procedural justice	.29***(0.07)	.23** (0.07)	.27*** (0.07)	.27***(0.06)	.22** (0.06)	.23** (0.06)
Main Effects						
Inter-partner competition		-.12 (0.08)	-.18 (0.17)		-.09 (0.07)	-.14 (0.21)
Interdependence		-.08 (0.24)	-.39 (0.29)		-.13 (0.24)	-.72 (0.45)
Environmental uncertainty		-.56 (0.79)	-.49 (0.92)		-1.61 (1.17)	-5.27** (1.70)
Equity alliance		.13 (0.11)	.12 (0.11)		.16 (0.11)	.13 (0.11)
Quality of information exchanged		.13* (0.05)	.10† (0.05)		.12* (0.05)	.12* (0.05)
Interactions						
Equity alliance x Inter-partner competition			.13 (0.19)			
Equity alliance x Interdependence			.73* (0.30)			
Equity alliance x Environmental uncertainty			-.32† (0.17)			
Information exch. x Interpartner competition						.02 (0.08)
Information exchange x Interdependence						.30† (0.16)
Information exch.x Environment uncertainty						1.91* (0.86)
R^2	0.237	0.307	0.348	0.227	0.308	0.351
ΔR^2		0.070	0.041		0.081**	0.043
ΔF		2.33*	2.27†		2.70*	2.40†

[a]N=126. The coefficients reported are unstandardized estimates, with standard errors in parentheses. p values (two tailed): † $p < 0.100$, * $p < 0.050$, ** $p < 0.010$, *** $p < 0.001$

trust will be stronger under high interdependence between partners. Hypothesis 5 predicts that the positive relationship between equity alliances and fragile trust will be stronger under high inter-partner competition. The coefficient of the interaction of *equity alliance* with *interdependence* is significant and positive (b = 0.73, p < 0.05 in Model 3), supporting Hypothesis 3. However, the coefficient of the interaction of *equity alliance* with *inter-partner competition* is insignificant (b = 0.13, p = n.s), thereby rejecting Hypothesis 5. These results yield partial support to the argument that the relationship between equity alliance and fragile trust will be stronger under behavioral uncertainty (interdependence and inter-partner competition).

Hypothesis 7 predicts that the positive relationship between equity alliances and fragile trust will be weaker under high environmental uncertainty. The coefficient of the interaction of *equity alliance* with *environmental uncertainty* is significant and negative (b = - 0.32, p < 0.10 in Model 3), supporting Hypothesis 7. This result suggests that equity alliances are an inefficient mode of governance for the production of fragile trust under environmental uncertainty.

Quality of Information Exchanged, Uncertainty and Resilient Trust

The additional variance accounted for by the interactions between the uncertainty variables and the quality of information exchanged is significant in Model 3 (ΔR^2 = 0.043, p < 0.10). Hypothesis 4 predicts that the positive relation between the quality of information exchanged between partners and resilient trust will be stronger in alliances with a high degree of interdependence between partners. Hypothesis 6 renders contrasting predictions for the relationship between the quality of information exchanged between partners and resilient trust. Marginally significant positive effect is found for the coefficient of the interaction of *quality of information exchanged* with *interdependence* in model 3 (b = 0.30, p < 0.10), giving some support to Hypothesis 4. Model 3 shows an insignificant interaction effect between *quality of information exchanged* and *inter-partner competition* (b = 0.02, p = n.s), thereby rejecting both the contrasting hypotheses (6a & 6b). These results suggest that the positive impact of *quality of information exchanged* on *resilient trust* improves with high interdependence between partners.

Hypothesis 8 predicts that the positive relation between the quality of information exchanged between partners and resilient trust will be stronger in alliances facing high environmental uncertainty. The coefficient of the interaction of *quality of information exchanged* with *environmental uncertainty* is significant and positive ($b = 1.91$, $p < 0.05$ in Model 3), supporting Hypothesis 8. This result suggests that good quality of information exchange is essential for the cultivation of resilient trust under high environmental uncertainty.

All in all, the results mostly support our argument that whereas a good quality of information exchange is essential for the cultivation of resilient trust under both behavioral and environmental uncertainty, equity alliances facilitate the cultivation of fragile trust under behavioral uncertainty and hinder its cultivation under environmental uncertainty.

4.4. DISCUSSION AND CONCLUSION

In this study, we focused on the formal (i.e., equity alliance) and informal (quality of information exchanged) determinants of trust and the conditions under which they facilitate or hamper the cultivation of trust. Specifically, we argued that the greater incentive alignment and administrative control mechanisms in equity alliance is positively related to fragile trust and the quality of information exchanged between partners is conducive to the cultivation of resilient trust. We further argued that the relationship between the formal and informal determinants of trust is contingent on the type of uncertainty facing the alliance. Specifically, whereas the quality of information exchanged will matter more to resilient trust under both behavioral (interdependence and inter-partner competition) and environmental uncertainty, equity alliance will matter more to fragile trust under behavioral uncertainty and matter less under environmental uncertainty. Consistent with prior research, our findings indicate that the quality of information exchanged between partners is conducive to the cultivation of resilient trust (Aulakh et al., 1996; Dyer & Chu, 2000). However, we did not find a significant relationship between equity alliances and fragile trust. Yet, even more importantly, our findings provide support for our argument that the quality of information exchanged between partners matters more to resilient trust when both behavioral and environmental uncertainty are high. Our

findings also support our argument that equity alliances facilitate the cultivation of fragile trust under behavioral uncertainty and hinder its cultivation under environmental uncertainty.

4.4.1. Contributions and Implications

These findings provide several insights into the formal and informal determinants of trust. First, prior research has repeatedly linked equity alliance and information exchange to inter-organizational trust. We extend this stream of research by distinguishing between two important types of trust, namely fragile and resilient trust and linking the formal determinants to fragile trust and the informal determinants to resilient trust. Our results suggest that the quality of information exchanged between partners is vital for the cultivation of resilient trust. We did not find a significant relationship between equity alliance and fragile trust but only moderating effects, which suggest that equity alliance functions as a quasi moderator and not a pure moderator. This finding in a way also confirms Inkpen & Currall's (2004) argument that formal control mechanisms places a brake on trust development, even if happens to be fragile trust.

Second, we refine the relationship between the informal and formal predictors of trust by examining the contingent effects of these predictors under behavioral and environmental uncertainty. Our results show differential effects of equity alliance under behavioral and environmental uncertainties. Equity alliance facilitates the cultivation of fragile trust under behavioral uncertainty, implying that the safeguards present in equity alliances facilitate the development of fragile trust only when those safeguards are essential. The interaction of equity alliance with environmental uncertainty was negative, implying that the superior incentive alignment and monitoring mechanisms in equity alliances are ineffective at facilitating information processing required under environmental uncertainty. Instead, the monitoring mechanisms work against accepting information from a partner without reservations. That is, the stringent monitoring mechanisms result in doubting information provided by a partner and hinder the development of fragile trust. Thus, this implies that the greater incentive alignment and monitoring mechanisms in equity alliance will facilitate trust production only when concerns about opportunistic behavior are severe.

Our results show that the quality of information exchanged between partners is highly essential for the cultivation of resilient trust under both behavioral and environmental uncertainties. Frequent and dense communication between partners helps partners understand each other's operating procedures and assists in the crafting of well-developed routines. This, in turn, alleviates conflicts due to misunderstanding. The open exchange of information between partners develops attachment between them and provides each other the trust that each will contribute fairly to the alliance and will not appropriate valuable resources. Furthermore, the quality of information exchanged between partners enhances a partner's confidence in the information provided by the other during environmental uncertainty, thereby improving resilient trust.

Furthermore, our results also show that whereas alliance duration has a significant positive relationship with resilient trust, it has no significant relationship with fragile trust. This result implies that whereas resilient trust develops with time due to the development of attachment and goodwill between partners, no amount of time spent between partners is likely to improve fragile trust.

As for practice, our paper implies that managers ought to understand the extent to which they intend to be involved in a particular alliance and invest in a type of trust accordingly. Taking into account the distinction between fragile and resilient trust is crucial as mechanisms to cultivate each type of trust are different. Because trust building mechanisms involve costs, managers ought to understand what type of mechanisms to invest in and when such mechanisms improve or hinder interorganizational trust. Our paper shows that managers ought to understand that investing in formal mechanisms improves fragile trust only under behavioral uncertainty, whereas investing in informal mechanisms improves resilient trust under both behavioral and environmental uncertainties.

4.4.2. Limitations and Suggestions for Future Research

This study's limitations indicate a number of additional opportunities for research on international alliance processes. First, this study focuses on the perspective of one of the parties in international alliances, in this case that of the Indian firms. However, it would be valuable to

gain both partners' perspectives on the alliance. Gathering such information could be very challenging however, especially with 21 countries, like in this sample.

Second, this study also has a methodological limitation, in that we largely rely on data collected through a cross-section survey. Though we supplemented the survey with field interviews, the interviews were not sufficiently in-depth to yield data for case study purposes. We welcome future research that adopts a case study approach. Alternatively, a sample of firms collected from a field survey could be tracked over a period of time. The longitudinal data collected this way could be analysed to examine the pattern of change of the relational process elements over time. Yet another possibility would be to bridge the methodology gap by bringing the two complementary research methods (survey and case studies) under one study. Bresman, Birkinshaw & Nobel (1999) have used this approach to identify the factors that facilitate knowledge transfer and the patterns of international knowledge transfer in cases of international acquisitions.

Third, we examined certain formal and informal determinants of trust. Future research could examine other formal and informal determinants of inter-organizational trust, such as contractual complexity or open commitment respectively.

All in all, we hope that this study may serve as a trigger for future studies that examine the contingent effects of formal and informal predictors of interorganizational trust.

CHAPTER 5[5]

TRUST REPAIR: TAKING IT TO THE NEXT LEVEL

The last two decades have witnessed a dramatic surge of research on various forms of interorganizational collaboration. Alliances constitute a distinct organizational form in which previously independent firms allow themselves to become dependent on each other's actions to obtain mutual benefits (Powell, 1990). In light of such dependence and the inherent unpredictability of the partner's behavior (i.e., behavioral uncertainty) extant research has identified interorganizational trust as a key factor contributing towards alliance success (Aulakh, Kotabe & Sahay, 1996; Dyer & Chu, 2003; Mohr & Spekman, 1994).

Our understanding of the benefits of sustaining trusting relationships between partners as well as ways of fostering trust in such relationships is considerable (e.g., Das & Teng, 1998; Dyer & Chu, 2000; Dyer & Chu, 2003; Parkhe, 1998; Zaheer, McEvily & Perrone, 1998). More recently, scholars have increasingly turned their attention to investigating the negative consequences of excessive trust (e.g., Langfred, 2004), trust violations (Zucker, 1986) and increased distrust (e.g., Lewicki, McAllister & Bies, 1998).

However, there are but a few studies on the issue of preserving and repairing trust (e.g., Sitkin & Roth, 1993; Shapiro, 1987). Moreover, the ones that do exist focus primarily at the inter-personal level (e.g., Sitkin & Roth, 1993; Lewicki & Bunker, 1996) or alternatively at the societal level of analysis (e.g., Shapiro, 1987; Zucker, 1986). The issue of trust repair in an interorganizational setting has not, to our best knowledge, so far been addressed. However, when considering interorganizational relationships, one has to take into account that strategic alliances constitute a very specific context where those who frame the strategic intentions of the organizations are often distinct from those who implement them. Those who design strategy - the strategic level - can thus be expected to play very different roles in the interorganizational collaboration than those who implement it - operational level (cf. Floyd & Lane, 2000).

[5] This paper is the result of joint work with Martyna Janowicz.

Therefore, the nature of trust at these two levels is likely to be different and thus the ways of repairing would need to be different as well. Various tools for repairing trust have been identified in the literature, as well as their applicability to dealing with specific kinds of breaches of trust. However, the questions of how trust restoration should proceed in an interorganizational context, in terms of the types of measures, what circumstances make it more or less feasible, where should the repair efforts originate, and many others remain largely unexplored. Drawing on the work in the area of organizational psychology and organizational behavior, we identify measures for trust repair appropriate for dealing with breaches of trust at the strategic and operational levels. Hence, because the nature of trust violations at the two levels would be different, the appropriate remedial action would be different as well. Additionally, organizational actors at both levels by virtue of the different positions they hold in the organizational hierarchy have unequal degrees of power regarding decision-making. That is, the boundary spanners at the strategic level would have greater power in making strategic decisions compared to those at the operational level. Therefore they would also play a dominant role in undertaking trust repair efforts.

In sum, the contribution of this paper is threefold. First, building on the assumption that repairing trust in a relationship between organizations is indeed worthwhile we propose a model of trust repair in an interorganizational context, that takes into account two distinct roles organizational actors play in the collaborative setting. Second, we discuss the efficiency of different trust repair measures depending on the 'location' of the breach, i.e., at what level in the organizational hierarchy does the breach of trust occur.

5.1. TRUST

5.1.1. Benefits and Costs of Building Trust

Our understanding of the benefits of sustaining trusting relationships between partners is considerable (e.g., Das & Teng, 1998; Dyer & Chu, 2000; Dyer & Chu, 2003; Parkhe, 1998; Zaheer, McEvily & Perrone, 1998). Previous empirical research demonstrates that trust

improves alliance performance by minimizing costs of transacting, negotiating, monitoring and enforcing (Dyer & Chu, 2003; Zaheer et al., 1998), as well as by diminishing opportunism concerns (Mohr & Spekman, 1994; Saxton, 1997; Zaheer & Venkatraman, 1995). Trust is also shown to reduce conflict in the relationship (Zaheer et al., 1998) by allowing partners to interpret each other's equivocal actions in a manner more favorable to the preservation of the relationship. In face of an unprecedented event, the presence of trust is likely to reduce the likelihood of negative interpretation (Noorderhaven, 2004).

Factors affecting the build-up of trust in an interorganizational context have been extensively discussed in the literature. Various authors have pointed to factors such as the length of the relationship and its intensity (Dyer & Chu, 2000), the flexibility of the partners and information exchange between them (Aulakh et al., 1996) as being conducive to trust formation. Yet, building trust in a relationship involves costs (Poppo & Zenger, 2002; McEvily, Perrone & Zaheer, 2003). The costs arise because cultivation of trust requires provision of assistance between exchange partners (Dyer & Chu, 2000; Sako & Helper 1998), frequent and intense communication (Aulakh et al., 1996; Dyer & Chu, 2000; Sako & Helper, 1998; Sako, 1991), and commitments to the alliance in the anticipation of continuation of the relationship (Aulakh et al., 1996; Lorenz 1988; Sako & Helper, 1998). Through such commitments of time, resources and opportunities foregone partners demonstrate benevolence towards each other (Larson, 1992).

Therefore, partners should expend efforts towards building interorganizational trust only when considerable improvement in alliance performance justifies such an effort (Poppo & Zenger, 2002: 710). All of the above is likely to also be true with respect to trust restoration effort; it should only be undertaken if the potential short- and long-term benefits outweigh its cost and if deriving the benefits from the ongoing relationship is preferred to obtaining them in an alternative manner (Lewicki & Bunker, 1996). In other words, the parties must be willing to invest time and effort in the trust restoration process (Lewicki & Bunker, 1996) We choose not to focus on the question of whether trust repair is worthwhile or not. Rather we will focus on the question of effectiveness of different trust repair methods at the different levels of analysis. In other words, we assume that the parties consider the repair of trust to be beneficial and take this as the point of departure for our further analysis.

5.1.2. Defining Interorganizational Trust and its Levels

For the purpose of this study we define trust as the positive expectation with regard to the partner's reliability, predictability and fairness in face of the possibility for opportunism and the resulting willingness to make oneself vulnerable to the partner (Mayer, Davis & Schoorman, 1995; Sarkar, Cavusgil & Evirgen, 1997; Zaheer et al., 1998). In an interorganizational context, we can speak of 'organizations trusting each other' only because they are made up of and managed by individuals (Aulakh et al., 1996). Prior research has repeatedly stressed the importance of individuals and their relationships in trust between organizations (e.g., Inkpen & Currall 1997; Lewis & Weigert 1992; Macaulay 1963; Ring & Van de Ven 1994). It is because of the crucial role individuals play in organizations that the idea of trust, which in itself can only be attributed to an individual (Zaheer et al. 1998), may be extended to an organization. It is through those individuals that the interfirm relations come into effect (Aulakh et al., 1996; Inkpen and Currall 1997; Nooteboom, Berger & Noorderhaven, 1997). Therefore in considering trust between collaborating organizations trust held by the individuals in boundary spanning roles would likely be of greater relevance compared to trust of the non-boundary spanning individuals. Building on this assumption, we further focus on the roles that organizational boundary spanners at different levels in organizational hierarchy play in shaping the course of organizational activities. From a methodological standpoint, trust at different levels in extant research means trust existing in alliances at the individual, group and firm level (e.g., Currall & Inkpen, 2002). Trust at different levels in our research refers to trust between individual boundary spanners that occupy different levels in the organizational hierarchy-strategic and operational.

Extant literature stresses the systematically different roles and modus operandi of top managers compared to their colleagues at lower levels in the corporate hierarchy (e.g., Bower 1970; Ring & Van de Ven 1994; Zaheer, Lofstrom & George, 2002). This is because different positions in organizational hierarchy are associated with specific expectations with regard to the position holder's contribution to the organizational tasks and thus with different roles of their incumbents (Floyd & Lane 2000). Organizational roles of individuals in turn affect their perceptions and mode of functioning. Trust between individuals in an interorganizational context has been argued

to develop by virtue of the roles the actors perform in their organizations (cf. Ring & Van de Ven 1994). Since the roles of organizational actors vary significantly across the hierarchical levels it is to be expected that the nature of trust across those levels would also vary (Zaheer et al. 2002). In particular, trust of boundary spanners at different hierarchical levels is likely to have distinct consequences for the collaborative relationship, due to their unique strategy related roles.

Accordingly the roles of top management may be assumed to be dominated by decision-making tasks, like ratifying or directing, while those of the non-executive managers (middle and operating managers) encompass primarily communication of and reaction to information, for example implementing, facilitating, conforming or responding (Floyd & Lane 2000). This implies that the roles of strategic-level boundary spanners regarding an alliance are likely to be quite different from those of operational-level boundary spanners. Therefore, while the executive-level boundary spanners are well positioned to influence the cooperation policy of the organization, this is much less so for operational level boundary spanners. That is also why the attitude towards the cooperation of those who frame strategic intentions of an organization should be considered as distinct from those who actually implement them at the operational level (Salk & Simonin 2003).

5.1.3. Strategic-level Trust

We have argued above that top managers, by virtue of their role as the primary decision-makers, play qualitatively different roles in the functioning of their organizations than the lower-level managers. Specifically, from the point of view of their participation in the strategy-making process, top managers play two crucial roles in the collaborative context: that of initiating the alliance (cf., Larson 1992, Zaheer et al. 2002) and that of shaping its structural context (cf. Burgelman 1983, Zaheer et al. 2002). Trust of the top-level boundary spanners, therefore, would be demonstrated in the collaborative arrangements of the alliance. Top management trust may also be of importance in the subsequent stages of the collaboration. This is likely to be the case when the collaboration encounters some unforeseen circumstances requiring an emergency intervention on the CEO's part (cf. Zaheer et al. 2002). In sum, strategic-level trust is primarily important in the initial stages of collaboration, but also later on if the alliance experiences crisis situations.

In light of the above discussion, and considering the tasks and roles of the top managers, as discussed above, we conceptualize strategic-level trust as the shared attitude of the company's top boundary spanners towards the partner firm (cf. Inkpen and Currall 1997) and its members (cf. Gulati & Gargulio 1999).

5.1.4. Operational-level Trust

Compared to top managers, organizational actors at lower hierarchical levels play quite different roles. Specifically, boundary spanners of lower levels in organizational hierarchy are responsible for the actual implementation of the collaboration (Doz, 1996) and the efficient execution of its everyday tasks (Zaheer et al. 2002). By carrying out the operational tasks of the collaboration, they effectively link the two organizations across their boundaries (cf. Inkpen & Currall 1997). Trust between boundary spanners, involved in the every-day implementation of the alliance, would thus have significant consequences for how the alliance unfolds over time (Zaheer et al. 2002). In line with the above and in contrast to strategic-level trust, we define operational-level trust between organizations as trust shared by the non-executive boundary spanners of the collaborating organizations towards the partner organization and its individual members. Thus similar to the strategic level, both the partner organization and/or its individual members can be the objects of operational-level trust.

5.2. VIOLATIONS OF TRUST: DEFINITION AND TYPES

Trust violation has been defined as a situation where one party perceives that the partner has intentionally exploited dependency by failing to fulfill expectations with respect to its behavior, or acting in a way that violated the trustee's values (cf. Bies & Tripp, 1996; Kim, Ferrin, Cooper & Dirks, 2004; Sitkin & Roth, 1993). "[B]ecause trust is perception-based rather than "objective", we expect that trustor perception of violations will matter as much or more than the "objective reality""(Bell, Oppenheimer & Bastien, 2002: 67).

Violation of trust can occur along a number of different dimensions in which the perception of trustworthiness is rooted (Bell et al., 2002). It can be related to expectations with regard to

context-specific task reliability or the perception that the partner does not share the same key values (Sitkin & Roth, 1993). This is akin to the distinction proposed by Kim et al. (2004) between violations of competence-based trust and violations of integrity-based trust. While the former refers to the violation of trustor's perception that the trustee possesses the skills and abilities that the job requires, the latter refers to the violation of trustor's perception that both parties hold congruous values (Kim et al, 2004).

Violation of Trust at The Strategic Level vs. at The Operational Level

In their role as strategy makers, top executives are responsible for initiating and directing the strategic actions of their organizations (e.g., partner choice, resource contributions or collaborative arrangements), and are not engaged in the everyday implementation of the alliance tasks. Their role is also likely to be equally (or even more) pivotal when the collaboration runs into unforeseen problems (Zaheer et al., 2002). Such problems are likely to occur when the very basis of the collaboration is undermined. Examples include appropriation of proprietary know-how (Hamel, 1991) or deliberate distortion or withholding of crucial information (Parkhe, 1993b; Williamson, 1985). Such occurrences would affect the perceived level of integrity of the partner and potentially put in question the possibility of continued collaboration.

Additionally, some strategic decisions of the partners, although not directly related to the collaboration at hand, may have serious consequences for the focal partners. For example, a decision to ally with the partner's rival (Gimeno, 2004), or to enter a new market, which up till then has been the domain of the partner, can profoundly affect the strategic-level trust. Such decisions do not concern partner's competence, as they are not connected with the joint tasks of the partner, but they may be an indication of the presence of value incongruity between the partners. For all the above reasons, strategic–level managers are likely to perceive integrity-based violations more than operational-level employees (cf. Bell et al., 2002). We thus expect strategic level trust violations to be predominantly related to the values of the partners.

In contrast, operational level employees are predominantly involved in the everyday implementation of the alliance tasks. The competent, timely and accurate delivery on the tasks that each of the parties is expected to perform is of crucial importance at this level. The

operational level employees who engage in the joint execution of alliance tasks depend on each other for such competent and timely delivery. Delays or failure to deliver on the part of the partner can have negative consequences for the achievement of alliance goals as well as those specific to each organization. This interdependence makes competence-based trust essential to the smooth functioning of the alliance. Compared to strategic-level employees, operational-level employees dealing with their counterparts at the partner organization are likely to perceive ability-related issues more (Bell et al., 2002). Initial trust at the operational level has also been argued to be established based on "occupational role identification, role-specific norms, and the awareness that trust is a functional and expeditious response to these individuals' role-related responsibilities for the day-to-day operation of the alliance." (Zaheer et al., 2002: 19). Violations of trust at the operational level would therefore be more likely related to the perceived task reliability of the partner's boundary spanners as reflecting the fulfillment of their role-related responsibilities. Therefore, we propose the following:

> *Proposition 1: Violations of strategic-level trust would be predominantly related to the partners' perceived value congruence, while violations of operational-level trust would be primarily task and competence (reliability) related.*

5.3. TYPES OF REMEDIES

Two types of remedies for repairing trust have been identified in the literature: non-legalistic and legalistic. Non-legalistic remedies encompass apology (Lewicki & Bunker, 1996; Schlenker & Darby, 1981), denial (Kim et al., 2004), explanation (Sitkin & Bies, 1993), and some form of compensation for the losses caused by the breach (Lewicki & Bunker, 1996). The non-legalistic remedies offer the trust violator a chance to convince the trustor of his innocence, apologize and make up for the damage caused, explain his behavior, as well as demonstrate good faith effort and change. Legalistic remedies have been defined in the intra-organizational context, as bureaucratic techniques, like for example formalization or standardization, which reduce the need to rely on interpersonal trust that has been violated (Sitkin & Roth, 1993). This implies that legalistic remedies substitute for the lost trust with some safeguards, which is in contrast to non-legalistic remedies that allow for the restoration of trust in the strict sense of the word. Applying

this idea to an interorganizational context, we conceptualize legalistic remedies as explicit rules and procedures meant to safeguard against the recurrence of trust violations and the consequences of such violations in case they do recur. Such measures can be considered legalistic to the extent that they "mimic legal forms and move beyond legal / regulatory requirements (Sitkin & Bies 1993)" (Sitkin & Roth, 1993: 373).

Extant literature suggests that the effectiveness of the two types of remedies for dealing with various violations of trust differs. First, as far as the value-related trust violations are concerned legalistic remedies are likely to be largely ineffective. They may be a tool for symbolizing unity of culture – a tangible demonstration of the fact that parties share common values - as well as a way of making explicit and enforcing that culture (Edelman 1990; Sitkin & Roth, 1993). However, the fact that they are explicit in character makes them largely ineffective in repairing violated value-related trust (Sitkin & Roth, 1993). Zucker (1977: 728) argues, "applying sanctions to institutionalized acts may have the effect of de-institutionalizing them". The persistence of institutionalized cultural norms and values rests to a large extent on them being tacit (Sitkin & Roth, 1993). Making the institutionalized beliefs and behaviors explicit through sanctioning leads to a perception of them being less objective and less impersonal as it "may indicate that there are other possible, attractive alternatives" (Zucker, 1977: 728). When trust violation is related to perceived value-congruity, formalization may create "a sense of distance and differentness that will not only make differences more salient than similarities but will also foster the interpretation of even superficial differences as indicative of deeper value incongruities." (Sitkin & Stickel, 1996: 198). Moreover, not only are the legalistic remedies ineffective in dealing with integrity-based trust violation, they can also escalate the problem (Sitkin & Stickel, 1996) as they increase perceived interpersonal distance, are impersonal in character and fail "to address the tendency of perceptions of value incongruity to generalize beyond the immediate situation." (Sitkin & Roth, 1993: 373).

Non-legalistic measures, in contrast, can be expected to be much more effective in repairing trust violations related to value incongruity. The importance of socialization has been stressed as way of achieving a unified cultural perspective in an intra-organizational context (Van Maanen & Schein 1979). Compared to legalistic remedies, non-legalistic remedies can be expected to be

more effective in repairing breaches of trust related to partners' integrity (Sitkin & Roth, 1993). Therefore, informal and personal processes, rather than legalistic ones, should be more effective in arriving at cultural congruence between two partnering organizations and in repairing trust based on perception of such congruence.

Therefore, at the strategic level, where trust and thus also its violations are likely to be related to partners' value congruence, we conclude that the non-legalistic remedies would be more suitable in dealing with trust violations than legalistic remedies. The above expectation seems to be additionally supported by the finding that trust between top level managers of two collaborating organizations is based on "a comprehensive set of personal factors [such as] prior interaction, common interests, individual achievements and competence, and personal commitment to the project." (Zaheer et al., 2002: 15). This is in contrast to individuals lower down in the organizational hierarchy who tend to form mutual trust based on task-related, readily observable characteristics (Bell et al., 2002; Zaheer et al., 2002). The fact that trust at the strategic level is based on social and personal factors, unrelated to the task performed, further strengthens our argument regarding the appropriateness of non-legalistic remedies for repairing such trust at this level. Accordingly we propose the following:

> *Proposition 2: At the strategic level, non-legalistic remedies would be more efficient in repairing violated trust than legalistic remedies.*

When integrity-based trust is violated, the trustor is likely to assume that such occurrence is representative of the character of the trustee. A one-time violation of value-related trust, is likely to lead to a perception of general value incongruity and consequent expectation that a violation will recur (cf. Sitkin & Roth, 1993). As Kim et al. (2004) argue:

> *"[P]eople intuitively believe that those with high integrity will refrain from dishonest behaviors in any situation, whereas those with low integrity may exhibit wither dishonest or honest behaviors depending on their incentives and opportunities. For this reason, a single honest behavior is typically discounted as a signal of honesty, given that those who are honest or dishonest can each*

> *behave honestly in certain situations (…). However, a single dishonest behavior is considered to offer a reliable signal of low integrity, given the belief that only persons of low integrity will perform in dishonest ways." (Kim et al, 2004: 106).*

Also, empirical research has revealed that in judging others' morality individuals tend to weigh negative behavior more than positive behavior (Kim et al., 2004; Martijn, Spears, Van der Plight, & Jakobs, 1992;). Additionally, a violation of a certain value can lead to generalization of the incongruity to other values of the partner. Sitkin & Roth (1993) argue that if one single value is violated, the trustor to achieve cognitive consistency is likely to perceive that all of the trustee's values are incongruous. However, other scholars argue that relationships are multifaceted and while partner maybe viewed as trustworthy in one area, s(he) may simultaneously be viewed as untrustworthy in another (Lewicki et al., 1998). That implies that trust and distrust can coexist in one relationship and distrust in one area need not and should not be generalized to others (Lewicki et al., 1998). We believe that the two arguments can be reconciled if we assume that distrust is likely to be generalized to other *related* values but not to *all* values. Overall, we conclude that even though trust and distrust can coexist in one relationship, consequences of a value violation can extend significantly beyond the narrow area in which it occurred by negatively affecting the perception of the trustee's general trustworthiness.

Therefore, since "once a thief, always a thief" and "a cheat will also be liar" heuristics seem to hold with respect to value-related trust, the non-legalistic remedies are likely to be efficient only to the extent that the trustee can prove that the violation of value-congruence did not occur (if violation is a matter of trustor's perception) or that it was not intentional (there were contextual factors that led to the occurrence of the violation). Therefore, in case of integrity-based trust violation, the only way to "save" trust is to prove one's innocence. Thus an apology, which involves admission of guilt and regret for the violation (cf. Schlenker & Darby, 1981) is unlikely to be effective for rebuilding integrity-based trust. Although an apology may convey to the trustor the impression that the trust violator is overall not such a bad person (Ohbuchi, Kameda & Agarie, 1989: 219) – thus limiting the generalization of the violation to other related values – the admission of responsibility that an apology involves sustains the negative evaluation of the

trustee with respect to the value that has been violated. From that perspective, denial, whereby the trust violator declares the allegation of intentionality of breach to be untrue is likely to be a more effective strategy for dealing with integrity-based trust violations[6] because it limits the perceived guilt of the trust violator[7] (Kim et al, 2004). For the same reason, an explanation, as an attempt to affect the trustor's perception of trustee's responsibility for the breach of trust, his motives for committing the breach and/or the unfavorability of the consequences of the breach (Sitkin & Bies, 1993) can be considered to be a viable strategy for restoring integrity-based trust between partners.

However, when a violation occurs, it is not readily clear whether it was intentional on the trustee's part or not. Therefore, an important cognitive activity that follows the violation of trust is the determination and assignment of responsibility; trust will only then be violated if the violator's actions are perceived to have been freely chosen (Lewicki & Bunker, 1996). When the trustor attributes the causes of violation to situational factors independent of the trustee, the trust would likely not be disrupted (Lewicki & Bunker, 1996). Therefore, following a violation of trust the causality between the breach and the trustee's actions needs to be established. The trustor can investigate the situation himself or rely on the social account provided by the trustee (Bies & Tripp, 2002). In other words, when a violation of integrity-based trust occurs, the parties would resort to non-legalistic remedies, in an effort to demonstrate (the trustee) and establish (the trustor) whether the violation has been committed intentionally or not.

If the trustor can with reasonable certainty conclude the intentionality of the trustee in committing the breach, the repair of trust will be very difficult. If on the other hand, the trustor establishes with reasonable certainty that the violation was not intended, the trustee may get a 'second chance', that is go on probation, during which his/her integrity or lack thereof can be tested. In empirical research, denial, a type of non-legalistic remedy, has been found to be more effective in repairing trust violations (of any type) when no subsequent evidence of guilt was

[6] We do not go into the issue of whether the violation was in fact not intentional, rather we choose to focus only on the extent to which the trustee is able to convince the trustor that this indeed was the case. The ethical aspect of the trustee potentially misleading the trustor in this respect is beyond the scope of this paper.

[7] Denial not only reduces the perceived guilt but also the intended redemption. However, given that the benefits of reducing the perception of guilt will outweigh the costs of reducing the positive integrity information, denial should be an effective measure for dealing with an alleged integrity-based trust violation (Kim et al., 2004).

revealed (Kim et al., 2004). In general therefore, we expect the effectiveness of repair efforts by means of non-legalistic remedies to depend on whether the trustor eventually attributes intentionality in committing the breach to the trustee or not.

> *Proposition 3: At the strategic level, the effectiveness of non-legalistic remedies will be conditional on the trustor's ability to attribute non-intentionality of trustee in committing the violation.*

We turn now to discuss the effectiveness of the two kinds of remedies for repairing competence-based trust violations. Extant literature seems to suggest that both legalistic (e.g., Sitkin & Roth, 1993) as well as non-legalistic remedies (e.g., Kim et al., 2004) are appropriate in this case. Kim et al. (2004) discuss the appropriateness of different non-legalistic remedies for dealing with competence-related and integrity-related trust violations. They argue and find that when a violation concerns matters of competence, trust repair should be undertaken by means of apology, which they define in terms of acknowledgement of responsibility and regret for having breached the trust (Kim et al., 2004). Overall, however, their analysis supports the claim that (some) non-legalistic remedies are useful for tackling reliability-related trust violations.

Also legalistic remedies have been argued to be effective measures for dealing with competence-based trust violations. By addressing context-specific problems and promoting reliability such measures are likely to be effective in repairing violations related to partners' task reliability. First, as far as the context-specificity is concerned, violations of task reliability trust are likely to be perceived as isolated, one-of incidents. This is in contrast to comparable violations of value expectations, which as was argued above, would likely lead to the perception of general incongruity and expectation of repeated breaches (Sitkin & Roth, 1993). Second, legalistic measures by comprehensively specifying the requirements and contingencies related to a given task, can be effective at restoring reliability-related trust (Sitkin & Roth, 1993). Obviously the more restricted the area in which the reliability breach occurs, the easier it would be to predict and specify all the relevant contingencies and draw up formal rules and procedures for dealing with them (cf. Arrow 1974; Sitkin & Roth, 1993). Therefore while legalistic mechanisms are not particularly effective in dealing with value-related trust violations, their effectiveness in

ameliorating reliability problems specific to a particular context would be much greater (Sitkin & Roth, 1993).

Even though both non-legalistic and legalistic remedies have been argued to be appropriate for operational-level (i.e., competence-related) trust violations, we believe that there are factors that affect the relative effectiveness of the two types of measures. In particular, we posit that the frequency with which the violation occurs is such a factor. When the consistency of the individual's behavior is perceived to be low, the causal attribution of the behavior to the person's characteristics is unlikely (McArthur, 1972). Therefore, to the extent that a trustor views a task-related violation to be an isolated or random event, his/her perception of the trustee's trustworthiness should not be affected (Sitkin & Roth, 1993). This is due to individuals' tendency to assign greater significance to positive competence-related information than to negative information concerning competence (Martijn, Spears, Van der Plight, & Jakobs, 1992). While a single successful performance is likely to lead the trustor to the conclusion that a trustee is competent, a single failure to perform is likely not to be interpreted as a signal of incompetence (Kim et al., 2004). This is based on the assumption that an incompetent trustee would not have been able to achieve such high level of performance, while under particular circumstances, both a competent as well as an incompetent trustee can fail to perform at the expected level (Martijn et al., 1992). Since an incident of reliability violation would likely be considered to be an anomaly in trustee's behavior, we argue that apology would be a sufficient measure to deal with the violation. Although apology confirms trustee's intentionality in committing the violation, such information in case of reliability-related breach would however unlikely devalue the perception of the trustee's general competence level (Kim et al., 2004). Therefore if the violation remains a sporadic occurrence, apology would likely be an effective strategy for dealing with violation of reliability-related trust.

However, as the violation increases in frequency and becomes a regular occurrence, it would be more effective for the parties to undertake some form of legalistic remedy. As the frequency of violation goes up, the reliability-violating behavior of the trust is likely to be assumed to be a typical behavior, in which case the trustor would start expecting that the violation will occur repeatedly in the future (Sitkin & Roth, 1993). What all of the above implies is that up to a

certain point, a violation is considered to be an isolated or an out-of-ordinary event, in which a simple apology may suffice. Above that threshold of violation frequency, however, this would no longer be the case and the trustor would likely undertake action, in form of a legalistic remedy to safeguard against future violations of similar type. We therefore, propose what follows:

> *Proposition 4: At the operational level, the effectiveness of the non-legalistic remedies for repairing trust will decrease as the frequency of the violations increases.*

> *Proposition 5: At the operational level, the effectiveness of the legalistic remedies for repairing trust will increase as the frequency of the violations increases.*

In line with our argument so far, when the operational level trust is violated repeatedly (i.e., reliability-related violation), repair of such trust can be accomplished through legalistic measures. Introduction of such legalistic measures, however, lies in the domain of the strategic level managers. Therefore, repair of operational-level trust by means of legalistic measures must be initiated at the strategic level, as it is the strategic-level managers who have the power to design and change the collaborative interface of the alliance. Such repair intervention would be undertaken when the information about the breach of trust at the operational level reaches the strategic level. Once the information does reach the top, the expediency with which legalistic measures designed by the strategic-level are then implemented at the operational level would affect the success of trust repair efforts. In contrast to top-level boundary spanners, lower-level boundary spanners have little influence on the collaboration policies of their organizations, but rather operate within their bounds (Zaheer et al. 2002). So, the effectiveness of repairing a breach of trust at the operational level would be greater the quicker the information about the violation reaches the top and the more efficiently the measures that it undertakes are implemented at the operational level, both of which depend on the level of vertical coordination and control in the trustor organization.

Organizations use a variety of vertical linkages to "coordinate activities between the top and the bottom of an organization" (Daft, 1998: 205). The higher the level of vertical coordination and control, the stronger the linkage between the strategic and operational level is likely to be. As the

strength of the linkage goes up, in turn, a higher extent of communication and coordination between the levels is to be expected (cf. Daft, 1998). Perrone et al. (2003) advance a similar argument, but from the point of view of an individual organizational member, i.e., role autonomy. They define role autonomy in terms of the boundary spanners' freedom to devise actions and behaviors, necessary to perform their tasks as well as the necessity to coordinate with other functional areas (cf. Perrone et al., 2003). Lower level of role autonomy would thus imply greater need for coordination with other functional areas.

We argue that operational employees with low levels of role autonomy, besides greater interdependence with other functions in the organization, would also experience a greater level of dependence on their superiors, while employees with greater role autonomy would experience lower level of both the horizontal *as well as* vertical interdependence. This would imply that the upward information flow (from the operational level to the strategic level) as well as the downward command flow (from the strategic to the operational level) would be precipitated. Therefore, a low level of autonomy would result in higher speed with which the information about reliability breaches at the operational level would reach the strategic level. At the same time, low autonomy would also lead to higher efficiency with which the legalistic measures for repair of trust would be implemented at the operational level

In sum then, when the violation frequency at the operational level reaches a certain threshold, the behavior of the trustee is no longer assumed to be a matter of exception and consequently an apology from the trust violating partner is likely not to be sufficient. As a result, the repeated occurrences of reliability-related violations would get reported to the higher levels of organizational hierarchy, which would result in introduction of legalistic remedies to safeguard against subsequent, future violations and restore reliability-based trust. The greater the level of vertical coordination manifested in the presence structural devices such as hierarchical referral, vertical information systems, the more efficient the two-way communication in the organizational hierarchy is likely to be (Daft, 1998). Therefore, the closer knit the operational and strategic levels are the sooner information about trust violations at the operational level would reach the top. If the introduction of the legalistic remedies however is overdue (when the

signals of the trust being breached do not reach the top management level), the feasibility of repairing trust at that level may be compromised. We therefore, propose the following:

> *Proposition 6: At the operational level, the effectiveness of legalistic measures for repairing trust will be negatively related to the level of the autonomy afforded to the operational level employees.*

5.4. DISCUSSION AND CONCLUSIONS

We have undertaken to analyze the issue of trust repair in an interorganizational context. We accomplished this by identifying two distinct levels of analysis – strategic and operational – distinguished according to the different roles that incumbents of various positions in organizational hierarchy have in the functioning of their organizations and thus also the alliance. While the former reflects the attitudes of the top-level organizational boundary spanners, the latter captures the attitudes of lower-level boundary spanners.

We have argued that violations of trust at the strategic level are likely to be related to the perceived value incongruity between the partners, while at the operational they are likely to have the task reliability as its primary object. Further, we have also posited that the appropriate remedies for mending integrity-based trust violations are non-legalistic in nature while repair of reliability-related trust violations could be accomplished both by means of legalistic as well as non-legalistic remedies, depending on the frequency with which the violation occurs. What these two arguments point to is that repair of strategic level trust would necessitate employing of non-legalistic remedies. The feasibility of repairing trust with such measures, however, would depend on the extent to which the trust violator can convince the trustee of his innocence, e.g., by disaffirming the causal link between his behavior and the trust breach, or by making clear that he had no other option. Repair of trust at the operational level, in turn, would call for the use of non-legalistic remedies at low frequencies of the violation occurrence and legalistic measures at relatively higher frequencies of the violation occurrence. Finally, since the repair of operational trust violations by means of legalistic remedies must be initiated at the strategic level, the degree of vertical coordination and control in the organization would affect the speed with which introduction of such measures would be undertaken and accomplished.

There are a number of implications of our analysis. First and foremost, it points to the fact that since the nature of trust violations at the two analyzed levels is likely to be different, the effectiveness of different types of remedial actions would also vary across levels. The use of inappropriate remedies would not only yield trust repair efforts ineffective, but also in some cases further destroy trust. For example, while legalistic remedies may be effective in dealing with operational-level trust violations, it might not be so for dealing with violations of trust at the strategic level. Moreover, employing legalistic remedies in the latter case can lead to further deterioration of trust at this level. In general therefore, remedial actions undertaken in an inappropriate manner may in addition to not contributing to repairing trust would also actually deepen the problem rather than solve it.

At the same time, although legalistic remedies would not be effective in repairing trust at the strategic level, they may be effective in preserving the collaboration. As we argued above, due to the generalization effect, violation of perceived value congruence may put the possibility of continued collaboration in question (given that the violator's intentionality is contended by the trustor). Moreover, due to the power inherent in the strategic-level positions, breakdown of trust at this level can result in decisions with severe strategic consequences for both partners, for example termination of the collaboration. In such circumstances, drafting a contract in greater detail to safeguard against similar future integrity-related violations could allow the partners to continue the collaboration, but this is different from saying that it would help to repair trust.

Trust would not be repaired, because making the common values to which the parties are supposed to adhere explicit would not restore the belief in the value congruence of the partners. Rather, it may bring the parties to further question the value congruence. Additionally, because a violation of one value is likely to be generalized to other (related) values and because no contract can provide for every possible contingency, a legalistic measure such as a contractual remedy cannot restore the positive perception of the trustee's overall character. Therefore, a legalistic measure would not repair strategic-level trust but it can substitute for the broken trust and so become the basis of continued collaboration. Such collaboration, however, would lack the advantages that a trusting relationship between partners brings about, i.e., resilience to external and internal shocks, lower transaction costs, higher information / knowledge flows, etc.

Moreover, we believe our analysis sheds some light on the ongoing debate in the literature with regard to whether trust and formal contracts should be deemed as substitutes (Ghoshal & Moran, 1996; Gulati, 1995; Uzzi, 1997) or complements (e.g., Luo, 2002; Poppo & Zenger, 2002). In our case, we could draw a certain extent of similarity between formal contracts and legal remedies. Our analysis implies that both may be true in an interorganizational setting, with the substitutability argument holding at the strategic level and complementarity argument being true at the operational level. Operational level trust being related to task performance and occupational roles (Zaheer et al., 2002), it can be effectively mended by means of legalistic (Sitkin & Roth, 1993) measures, as these restore and preserve the partner reliability. This suggests that at this level of analysis trust and legalistic measures would be complements. At the strategic level however, trust being rooted primarily in the perceptions of value congruence legalistic measures would not only be ineffective at repairing it, but would likely further harm it. At this level then, trust and legalistic measures can be considered to be either independent or negatively related, i.e., substitutes.

Finally, our discussion indicates that compared to operational level trust, violation of strategic level trust is potentially much more severe in consequences. There are two reasons for that. First, due to the organizational role of the strategic level actors, and the power assigned to their position, violation of trust at that level can result in direct and severe consequences for the collaboration as well as both the partners (e.g., termination of the collaboration or significantly reduced commitment to the collaboration). Second, since the violation of trust at the strategic level is likely to be related to perceived lack of value-congruence, and since the one-time violation in this respect is likely to be generalized to the overall character of the partner, trust at this level is less resilient, as failure to prove innocence just once will render trust repair virtually impossible. In that sense, if the trustee is unable to establish its innocence denial as a non-legalistic strategy may have worse consequences than an apology. In other words, strategic-level trust can be said to be more fragile than operational-level trust, not in terms of strength, but rather in the sense that a singular violation can cause its irreversible collapse.

CHAPTER 6

OVERALL CONCLUSIONS

Hunter & Schmidt (1990) began the preface of their well-known book "Methods of Meta-Analysis" with the following sentences, "Scientists have known for centuries that a single study will not resolve a major issue…..thus, the foundation of science is the cumulation of knowledge from the results of many studies". However, single studies that deal with a single or few relationships in depth lay the foundation stones upon which cumulative studies rest. In other words, just as a single tree does not make a forest, there can be no forest without trees. The four chapters in my dissertation balance the act of attending to important and relevant details of science without losing sight of its larger picture.

Over the past couple of decades research on alliance performance has grown in importance tremendously and with it the number of determinants of alliance performance has mushroomed as well. The first paper of my dissertation takes on an important task of taking stock of empirical research on alliance performance by not only synthesizing results across studies to generalize findings but also by examining novel and important theoretical relationships that provided a coherent picture of the determinants of alliance performance. The second paper of my dissertation identifies the boundary conditions of the widely studied relationship between trust and alliance performance. Although the meta-analysis revealed that trust is the strongest determinant of alliance performance, it also indicated the presence of moderators-- a consistent pattern of which was not revealed by the moderator analysis. A detailed examination of the trust-performance relationship in the second paper revealed the conditions under which trust matters more or less to alliance performance.

The second paper establishes the importance of trust; the third paper examines the conditions under which such a vital asset is produced. Whereas the second paper shows that trust is needed more under behavioral uncertainty and less under environmental uncertainty, the third paper examines whether the formal and informal mechanisms of trust production thrive or fail in the

presence of the two types of uncertainties. The first three papers showed that trust is an important asset and also that cultivating this asset involves costs. Given that trust is not costless, violating it in a relationship is likely to have serious consequences for the sustenance of the relationship. The fourth paper completes the picture by theoretically analyzing the efficiency of legalistic and non-legalistic remedies in restoring trust at different levels in the organizational hierarchy.

6.1. FINDINGS AND IMPLICATIONS

Prior empirical research on alliance performance has adopted a variety of theoretical perspectives, which have not often been integrated. The emphasis on the development and testing of new theory rather than on empirical generalization has led to over 100 distinct variables being investigated as antecedents of alliance performance. Thus, despite extensive research no clear consensus exists regarding the antecedents of alliance performance. The meta-analysis of alliance performance in the first paper is the first to conduct a quantitative synthesis of the extensive literature and obtain empirically precise generalizations on the determinants of strategic alliance performance. The empirical evidence provided strong evidence for the importance and the unique contribution of initial conditions, governance structure, and post-formation dynamics for understanding alliance performance. Moreover, certain unexpected findings (e.g., the link between prior ties and both contractual safeguards and information exchange) that our meta-analysis revealed emphasize the need for new theoretical and empirical work investigating in more detail the nature of these relationships and the underlying mechanisms.

Findings of the second paper indicate that the positive relationship between trust and alliance performance is stronger when concerns about behavioral uncertainty are high (due to interdependence between partners and inter-partner competition) and weaker when environmental uncertainty is high (due to environmental instability and unpredictability). Though previous research provides general support for the idea that trust is beneficial to alliances, it has not yielded a general theory regarding the conditions under which trust facilitates and hinders alliance performance. We have presented such a theory, based on the distinction between behavioral and environmental uncertainty, and shown empirically that, apart from the

positive direct relationship between trust and alliance performance, more subtle interaction effects can be distinguished. Our theory and findings imply that partners should expend efforts in developing interorganizational trust only when the potential improvement in alliance performance justifies such an effort, which in turn depends on the type of uncertainty faced by the alliance. This study challenges conventional wisdom in that it shows trust to be a double-edged sword, with a performance-enhancing potential that increases under certain conditions but decreases under other conditions.

The third paper focused on the formal (i.e., equity versus non-equity alliances) and informal (quality of information exchanged within the alliance) determinants of trust, and the conditions under which these facilitate or hamper the cultivation of trust. Consistent with prior research, the findings indicate that the quality of information exchanged between partners is conducive to the cultivation of resilient trust (Aulakh et al., 1996; Dyer & Chu, 2000). However, we did not find a significant relationship between equity alliances and fragile trust. Moreover, the results show that the quality of information exchanged between partners matters more to resilient trust when both behavioral and environmental uncertainty is high. Our findings also support our argument that equity alliances facilitate the cultivation of fragile trust under behavioral uncertainty and hinder its cultivation under environmental uncertainty. Thus, the third paper refines existing research on the determinants of interorganizational trust and provides insights on when to invest in certain formal and informal mechanisms of cultivating inter-organizational trust.

The fourth and final paper of the dissertation analyzes the issue of trust repair in an interorganizational context. We identify two distinct levels of analysis – strategic and operational. While the former reflects the attitudes of the top-level organizational boundary spanners, the latter captures the attitudes of lower-level boundary spanners. We have argued that violations of trust at the strategic level are likely to be related to the perceived value incongruity between the partners, while at the operational they are likely to have the task reliability as its primary object. Further, we have also posited that the appropriate remedies for mending integrity-based trust violations are non-legalistic in nature while repair of reliability-related trust violations could be accomplished both by means of legalistic as well as non-legalistic remedies, depending on the frequency with which the violation occurs. This study points out that since the

nature of trust violations at the two analyzed levels is likely to be different, the effectiveness of different types of remedial actions would also vary across levels. Furthermore, it argues that remedial actions undertaken in an inappropriate manner may not only fail to contribute to the reparation of trust, but may actually deepen the problem rather than solve it. Our discussion also indicates that compared to operational level trust, violation of strategic level trust is potentially much more severe in consequences.

6.2. SUGGESTIONS FOR FURTHER RESEARCH

The papers in this dissertation offer several opportunities for future research. This dissertation has focused on inter-organizational trust. Trust is part of a web of concepts regarding relational and partner specific assets. It is vital that future research works toward clarifying how these concepts relate to each other, e.g. in terms of cause and effect, substitute and complement, as well as how they can best be operationalized. For example, partner reputation, which is one of the partner-specific assets, might condition the relationship between trust and alliance performance. Network literature has emphasized that reputed partners are likely to have better access to resources in the network (Gulati, 1998). This resource access is likely to benefit the alliance. However, a reputed partner is likely to contribute its rare network resources to the alliance only when it trusts the alliance partner. Future research could examine the benefits derived from trust in the presence of other partner specific and relational assets.

Research has identified other organizing mechanisms in alliances besides trust, such as formal contracts (Poppo & Zenger, 2002; Carson, Madhok & Yu, 2006) and routines (Zollo et al., 2002). Scholars have been debating whether trust and formal contracts function as substitutes (e.g., Gulati, 1995) or complements (e.g., Poppo & Zenger, 2002; Carson, Madhok & Yu, 2006). Contract law varies across institutional settings (Arrighetti, Bachmann & Deakin, 1997). Therefore, whether trust and formal contracts function as substitutes or complements may vary across institutional settings. For instance, in institutional settings such as Japan or the United states where relationships are primarily dictated either by trust or formal contracts, respectively, these two governance mechanisms are more likely to replace or substitute each other. Similarly, benefits arising from trust might increase or decrease in the presence of routines, depending on

whether routines complement or substitute trust. Examining whether trust and routines coexist or supersede each other can be a fruitful area for future research.

Furthermore, prior research has utilized the same variable to operationalize both trust and routines. Gulati (1995) used prior ties to capture trust, whereas Zollo et al. (2002) suggest that prior ties with a partner indicate the presence of well-developed routines between the focal firm and its partner. A possible way of resolving this issue is to examine whether prior ties reduce the detrimental effects resulting from sources of internal tension in alliances other than those relating to behavioral uncertainty. A potential candidate could be cultural differences between partners (Pothukuchi et al, 2002). Conflicts due to cultural differences do not result from concerns about behavioral uncertainty such as knowledge appropriation, but from differences in ideologies, values and management styles of partners (Parkhe, 1991). Mechanisms such as devising formal training programs to learn about each other's culture can go a long way in reducing conflicts arising due to cultural differences (Parkhe, 1991). Routines, rather than trust are likely to play an important facilitating role when cultural differences are high. The manner in which prior ties moderate the relationship between cultural difference and alliance performance might yield indirect insights into whether prior ties capture trust or routines. If prior ties capture routines instead of trust, it is likely to reduce the detrimental effect of cultural distance by positively moderating the negative relationship between cultural distance and alliance performance. Research examining the role of prior ties in minimizing the detrimental effects of differences due to national, societal and organizational cultures could shed more light on this issue.

Also the manner in which trust is associated with relational governance deserves further research attention. Whereas Carson et al. (2004) equate trust to relational governance; Poppo & Zenger (2002) consider trust as one of the relational norms constituting relational governance besides flexibility, solidarity and information exchange. Other relational norms might play a role in the cultivation of trust; the third paper of this dissertation examined the manner in which information exchange is related to trust. Future research could examine how other relational norms such as solidarity and flexibility are related to trust, as well as to each other.

The first two papers of this dissertation examined an important alliance outcome, alliance performance. The role of trust in facilitating or hindering other alliance outcomes such as knowledge creation and knowledge transfer are fruitful areas for future research. Researchers have acknowledged the importance of the recipient's absorptive capacity for successful knowledge transfer (Inkpen & Dinur, 1998). A possible extension would be the impact of relative absorptive capacities of the partners on knowledge creation. An imbalance in the absorptive capacities of the partners could result in knowledge appropriation by the partner with stronger absorptive capacity in lieu of knowledge creation. The risk of knowledge appropriation is likely to depend on the type of knowledge created (incremental vs. substantial innovation) in the alliance. Inter-organizational trust could be a possible contingent factor that mitigates fears for knowledge appropriation in substantial knowledge creation alliances in spite of inequity in partner absorptive capacities.

6.3. CONCLUDING REMARKS

Prior research examining process or relational aspects of alliances are not only few and fragmented (Yan & Zeng, 1999) but also remain distanced from outcome theories (Parkhe, 1993a). Development of a complete theory of alliances will not be possible "until theories of processes evolve substantially beyond their current stage and are effectively merged with theories of outcomes", Parkhe (1993a: 262). Parkhe (1993a) calls for an integration of the "diverse aspects" of inter-firm alliances that "have remained inchoate, as if they were unconnected, rather than being tightly interwoven aspects of the common phenomenon of [alliances]" (Parkhe, 1993a: 232). This dissertation has made significant strides in this direction.

APPENDICES

APPENDIX 1: Survey Items Used in Scales

Alliance Performance. (α=0.90) (5 point Likert type scales ranging from 'strongly agree' to 'strongly disagree').

- The objectives for which the collaboration was established are being met.
- Our firm is satisfied with the financial performance of the collaboration.
- Our foreign partner firm seems to be satisfied with the financial performance of the collaboration.
- Our firm is satisfied with the overall performance of the collaboration.
- Our foreign partner firm seems to be satisfied with the overall performance of the collaboration.

Fragile Trust. (α =0.82) (5 point Likert type scales ranging from 'strongly agree' to 'strongly disagree').

- Our foreign partner always meets its obligations towards the relationship.
- Our foreign partner trusts that our firm always meets our obligations toward the relationship.
- We trust our foreign partner will not deviate from the terms of the agreement

(Resilient) Trust[8]. (α =0.85) (5 point Likert type scales ranging from 'strongly agree' to 'strongly disagree').

- Sometimes our foreign partner changes facts slightly in order to get what they want. (R)
- Our foreign partner has promised to do things without actually doing them later. (R)
- Our firm is generally doubtful of the information provided to us by our foreign partner. (R)
- Our foreign partner firm is generally doubtful of the information we provide them. (R)
- Our foreign partner has given us truthful and valuable information even when it did not form part of the contract.

Quality of Information Exchanged. (α =0.81) (5 point Likert type scales ranging from 'strongly agree' to 'strongly disagree').

- Our foreign partner firm has provided relevant information whenever we asked them for it.
- We are promptly notified by our foreign partner whenever any major change occurs at their firm.
- We get clear information about the plans of our foreign partner concerning the collaboration well in advance.
- How often do senior managers from your firm communicate with their counterparts in the foreign partner firm? (1=daily; 5= once a month or less)
- How often do senior and middle managers in your company make business trips to your foreign partner firm? (1=twice a month or more; 5= once a year or less).

Procedural Justice. (α =0.81) (1 = Not at all, 5 = Always).

- Do senior managers from your foreign partner firm communicate with senior managers from your firm before making any strategic decision?
- Are senior managers from your firm free to challenge and refute the strategic views of senior managers from your foreign partner firm?
- Are those managers from your foreign partner firm who are involved in strategic decision making well informed and familiar with the local situations of your firm?
- Does your foreign partner firm give your firm a full explanation of the final strategic decisions made by them?

[8] Items capturing Trust in Chapter 3 and Resilient Trust in Chapter 4 are the same.

APPENDIX 2: Remedies Undertaken Against Common Method Bias and Single Respondent Bias

Remedy and rationale for adopting the remedy	**Implementation of the remedy in our study**
(Procedural Remedy 1(PR)) **Criterion and predictors from different sources.** Obtaining measures of dependent and explanatory variables from different sources as much as possible helps control common method or single respondent bias (Podsakoff et al., 2003).	We obtained data on most (3/4) of the moderator variables and on several control variables from archival sources.
(PR2) **Protecting respondent anonymity.** This technique decreases respondents' tendency to be socially desirable, acquiescent or lenient when crafting their responses (Podsakoff et al., 2003: 888).	Our cover letter assured respondents complete anonymity.
(PR3) **Scale-reordering.** Reduces the likelihood of respondents guessing the relationship between the predictor and criterion variables and consciously matching their responses to the two measures (Parkhe, 1993b).	In our questionnaire the trust and alliance performance items were placed far apart from each other – namely, about 50% of the relevant questionnaire pages apart. Items were not grouped together by variable, and the variables were not labeled based on the reported constructs (trust etc.).
(PR4) **Reducing item ambiguity**. Careful attention to the wording of items helps reduces item ambiguity (Tourangeau, Rips, Rasinski, 2000).	We were careful to avoid vague concepts, avoid double-barreled questions and keep questions simple, all steps which reduce item ambiguity (Tourangeau, Rips, Rasinski, 2000). We pretested the survey with Indian managers, which helped us identify and replace a small number of ambiguous words.
(Statistical Remedy 1(SR)) **Partial correlation adjustment.** If after partial correlation adjustment any of the zero-order correlations that were significant before the adjustment remains significant, this indicates that the results cannot be attributed to common method. (Lindell & Whitney, 2001).	All our significant zero-order correlations remained significant after the partial correlation adjustment, suggesting that common method bias was not a serious problem in our study.
(SR2) **Significance of the interaction terms.** Significant interaction terms suggest that the results are less likely to be affected by single respondent bias. (Brockner, Siegel, Tyler & Martin, 1997).	All our interaction effects are significant, including the one interaction that involves two survey-based items. With significant interactions it is difficult to imagine single respondent bias as the respondents are unlikely to have consciously theorized the moderated relationships when responding to the survey
(SR3) **Triangulation using archival sources.** Triangulating survey data with data from secondary sources is often used to check for convergent validity of a construct (Parkhe, 1993b; Keats and Hitt, 1988; Dhanaraj, Lyles, Steensma & Tihanyi, 2004).	-The correlation between the subjective and secondary alliance performance measures (i.e., return on capital employed) available for 35 equity alliances was highly significant ($r = 0.38$, $p=0.02$), given that it was computed on a small sample ($n =35$). -We compiled archival data on the number of Indian partner employees for 66 Indian firms in our sample The data obtained from the two sources correlated highly, 0.98 ($p<0.000$). - We also obtained archival data on the number of foreign employees for a sub-set of 52 foreign firms. The resulting correlation was 0.97 ($p<0.000$). Survey data was available on 68 foreign firms
(SR4) **Triangulation using field interviews.** Code interview-based data to establish reliability and validity of variables. (We used the interview notes to validate the trust variable because our interview focused mainly on the quality of the relationship between the partners. Because the interview notes did not provide enough useful data on how well the alliance performed, we could not use them to validate the alliance performance construct.)	We used interview data available for 10 alliances to validate the trust measure. Two independent coders categorized the interview responses using three-point scales to indicate the extent to which inter-organizational trust existed in the relationship. We did not exceed three-point categorization for ease of interpretation of the interview data (e.g., Lau & Woodman, 1995; Lee, Mitchell, Wise & Fireman, 1996). The correlations between the trust scale obtained from the survey and the interview notes coded by the independent raters is 0.70 ($p < 0.05$). No discrepancy was noted regarding variable content.
(SR5) **Harman's one-factor test.** If a substantial amount of common method bias exists in the data, a single or general factor that accounts for most of the variance will emerge when all the variables are entered together (Podsakoff et al, 2003).	An unrotated principal components factor analysis on all the variables measured using the survey instrument revealed four factors with Eigenvalues greater than 1.0, which together accounted for 59 percent of the total variance; also, the first (largest) factor did not account for a majority of the variance (19.71%).

SAMENVATTING: DUTCH SUMMARY

De afgelopen twee decennia kunnen worden bestempeld als een periode waarin bedrijven in sterk toenemende mate hun heil hebben gezocht bij strategische allianties, alsmede een periode waarin dit fenomeen in toenemende mate centraal is komen te staan in academisch onderzoek. Strategische allianties kunnen gedefinieerd worden als relatief duurzame, coöperatieve overeenkomsten voor gezamenlijke ontwikkeling, productie en/of distributie van producten. Eerder onderzoek naar allianties heeft zich met name geconcentreerd op vragen aangaande de keuze van partners om een alliantie aan te gaan, de keuze van een geschikte partner en structuur voor de alliantie en de evolutie van allianties over tijd. Hoewel het effect van elk van deze factoren op de performance van allianties is aangetoond, wordt het vergroten van inzicht in de determinanten van alliantie performance nog altijd beschouwd als één van de belangrijkste doelen in dit onderzoeksgebied.

In voorliggende dissertatie stel ik de relatie tussen alliantie performance en één van haar determinanten – vertrouwen tussen ondernemingen (interorganizational trust) – centraal. Het proefschrift bestaat uit vier papers die elk op hun beurt ons inzicht in bovengenoemde relatie trachten te verdiepen, alsmede onderzoeken op welke manieren deze vorm van vertrouwen kan worden gecultiveerd en hersteld. Het eerste paper presenteert een meta-analyse van de determinanten van alliantie performance op basis van data over 15.201 allianties afkomstig uit 78 empirische onderzoeken. Meta-analyse is een statistische techniek bedoeld voor het aggregeren van resultaten van meerdere empirische studies, terwijl het tegelijkertijd corrigeert voor potentiële verklaringen voor de variatie tussen de resultaten van deze verschillende studies, zoals sampling error en measurement error. Het eerste paper heeft derhalve met name als doel: (a) het identificeren en nauwkeurig schatten van de effecten van die factoren die, te midden van het brede scala aan variabelen dat inmiddels is bestudeerd, alliantie performance significant beïnvloeden, (b) het evalueren van de generaliseerbaarheid van deze effecten over verschillende empirische contexten en verscheidene operationalisaties van alliantie performance, en (c) het schatten van het gezamenlijke effect van beginvoorwaarden, governance structuur en partner gedrag op alliantie performance door middel van de ontwikkeling en toetsing van een overkoepelend conceptueel raamwerk bestaande uit die factoren die het meest veelvuldig zijn gerelateerd aan alliantie performance. De empirische resultaten van de meta-analyse leveren

sterk bewijs voor de unieke contributies van beginvoorwaarden, governance structuur en de post-formatie dynamiek aan ons inzicht in alliantie performance. Daarnaast benadrukken verscheidene onverwachte bevindingen (e.g., de link tussen prior ties en zowel contractual safeguards als het delen van informatie) de benodigdheid van vernieuwend en verdiepend theoretisch en empirisch onderzoek naar de aard van deze relaties en de onderliggende mechanismen.

Het tweede paper onderzoekt of, en in welke mate, het effect van interorganizational trust op alliantie performance contingent is op uncertainty. De theorie bouwt voort op het onderscheid tussen behavioral uncertainty, welke betrekking heeft op de potentiële acties van de alliantie partners, en environmental uncertainty, welke zijn oorsprong vindt buiten de alliantie. Het kernargument is dat trust van groter belang is voor alliantie performance in geval van behavioral uncertainty (als gevolg van de interdependentie tussen partners en hun onderlinge concurrentie) en van minder belang is in geval van environmental uncertainty (als gevolg van de instabiliteit en onvoorspelbaarheid van de omgeving). De analyse is gebaseerd op een survey van 126 internationale allianties tussen Indiase bedrijven en hun buitenlandse partners. Ik heb in het kader van dit paper gekozen voor de survey methodologie vanwege de beperkingen die gepaard gaan met het verkrijgen van objectieve data voor het operationaliseren van de onafhankelijke (interorganizational trust) en de afhankelijke (alliantie performance) constructen die centraal staan in de studie. Het survey en de interviews, uitgevoerd tijdens pretests, leidden tot rijkere data over deze constructen en een beter begrip van het fenomeen. Wat betreft de empirische resultaten van dit paper vinden we allereerst dat de positieve relatie tussen trust en alliantie performance inderdaad sterker is in geval van sterke behavioral uncertainty en zwakker in geval van sterke environmental uncertainty. Hoewel eerder onderzoek doorgaans ondersteuning vindt voor het idee dat trust voordelig is voor allianties, heeft dit niet geleid tot een algemene theorie inzake de omstandigheden waaronder trust alliantie performance vergemakkelijkt en bemoeilijkt. In dit paper hebben wij, gebaseerd op het onderscheid tussen behavioral en environmental uncertainty, een dergelijke theorie ontwikkeld en hebben wij empirisch aangetoond dat er naast de positieve directe relatie tussen trust en alliantie performance subtielere interactie-effecten werkzaam zijn. Onze theorie impliceert dat partners alleen dan inspanningen moeten leveren om interorganizational trust te ontwikkelen wanneer de potentiële verbetering van alliantie

performance deze inspanningen rechtvaardigt, hetgeen op zijn beurt afhankelijk is van het type uncertainty waarmee de alliantie wordt geconfronteerd. Het onderzoek betwist derhalve gevestigde wijsheid door aan te tonen dat trust een "double-edged sword" is met het potentieel performance te verbeteren in sommige situaties maar het te verzwakken in andere situaties.

Het derde paper relateert de formele (equity alliantie) en informele (kwaliteit van de gedeelde informatie) determinanten aan twee verschillende vormen van trust, respectievelijk, contractual en relational trust, en onderzoekt de voorwaarden waaronder de formele en informele determinanten de cultivatie van de twee verschillende vormen van trust vergemakkelijken of bemoeilijken. Er wordt gesteld dat equity allianties de cultivatie van contractual trust faciliteren in geval van behavioral uncertainty maar de cultivatie ervan in de weg staan in geval van environmental uncertainty, terwijl de kwaliteit van de tussen partners gedeelde informatie de cultivatie van relational trust faciliteert in geval van zowel behavioral als relational uncertainty. Om dezelfde redenen als hierboven genoemd in het kader van het tweede paper is de analyse gebaseerd op een survey van 126 internationale allianties tussen Indiase bedrijven en buitenlandse bedrijven uit 21 landen. Overeenkomstig resultaten uit eerder onderzoek vinden we dat de kwaliteit van het delen van informatie zich leent voor de ontwikkeling van "resilient trust" (e.g., Aulakh et al., 1996; Dyer & Chu, 2000). Echter, we vinden geen significante relatie tussen equity allianties en "fragile trust". Bovendien wijzen de resultaten uit dat de kwaliteit van het delen van informatie meer bevorderlijk is voor resilient trust wanneer zowel behavioral als environmental uncertainty sterk zijn. De bevindingen bevestigen tevens ons argument dat equity allianties de cultivatie van fragile trust faciliteren in geval van behavioral uncertainty en dit in de weg staan in geval van environmental uncertainty. Aldus verfijnt het derde paper bestaand onderzoek naar de determinanten van interorganizational trust en biedt het nieuwe inzichten in de situaties waarin ondernemingen zouden moeten investeren in bepaalde formele en informele mechanismen voor het cultiveren van deze vorm van trust.

Het vierde en laatste paper neemt een meer longitudinale benadering, in acht nemend dat interorganizational trust opgebouwd, afgebroken, en wederom hersteld kan worden. Het paper bestudeert "trust repair" tussen ondernemingen door het identificeren van twee afzonderlijke analyseniveaus – strategisch en operationeel – waartussen onderscheid wordt gemaakt aan de

hand van de rollen die organisatieleden met verschillende hiërarchische posities hebben in het algeheel functioneren van hun organisatie, alsmede, daardoor, in dat van de alliantie. We stellen dat het schenden van vertrouwen op strategisch niveau gerelateerd is aan het gepercipieerde waardeverschil tussen de partners, terwijl het op operationeel niveau waarschijnlijk met name invloed heeft op task reliability. Als gevolg hiervan stellen we dat de geschikte remedies voor het herstellen van strategic-level trust non-legalistisch zijn en dat hun effectiviteit afhankelijk is van de mate waarin de partij die het vertrouwen heeft geschonden haar onschuld kan bewijzen aan de andere partij. Herstel van operational-level trust zou echter kunnen worden bewerkstelligd door middel van remedies van zowel legalistische als non-legalistische aard, afhankelijk van de frequentie waarmee schending plaatsvindt. Tenslotte stellen we dat, aangezien herstel van operational-level trust door middel van legalistische remedies geïnitieerd dient te worden op strategisch niveau, de mate van verticale coördinatie en aansturing binnen de organisatie de snelheid beïnvloedt waarmee de introductie van dergelijke maatregelen ondernomen en bereikt wordt. Al met al levert dit theoretische paper een belangrijke contributie, onder andere door erop te wijzen dat onjuist toegepaste remedies niet alleen een grote kans lopen hun uiteindelijke doel – het repareren van trust – niet te realiseren, maar het probleem daadwerkelijk kunnen vergroten.

REFERENCES

Aguilar, F.J. 1967. ***Scanning the Business Environment.*** New York: Macmillan.

Aiken, L.S., & West, S.G. 1991. ***Multiple regression: Testing and interpreting interactions.*** Thousand Oaks, CA: Sage Publications.

Aldrich, H.E. 1979. ***Organizations and Environments.*** Englewood Cliffs, NJ: Prentice-Hall.

Anderson, C.R., & Paine, F.T. Managerial perceptions and strategic behavior. ***Academy of Management Journal,*** 18 (4): 811-823.

Anderson, J.C., & Gerbing, D.W. 1988. Structural equation modeling in practice: A review and recommended two-step approach. ***Psychological Bulletin,*** 103: 411-423.

Ariño, A. & De la Torre, J. 1998. Learning from failure: Towards an evolutionary model of collaborative ventures. ***Organization Science,*** 9: 306-325.

Arrighetti, A., Bachmann, R., & Deakin, S. 1997. Contract law, social norms and inter-firm cooperation. ***Cambridge Journal of Economics,*** 21 (2): 171-195.

Armstrong, S.J., & Overton, T.S. 1977. Estimating non-response bias in mail surveys. ***Journal of Marketing Research,*** 14: 396-402.

Arrow, K. J. 1974. ***The Limits of Organization***, New York, NY: Norton.

A.T. Kearney, 2004. FDI confidence index. ***The Global Business Policy Council,*** 7: 1-44.

Aulakh, P., Kotabe, M., & Sahay, A. 1996. Trust and performance in cross-border marketing partnerships: A behavioral approach. ***Journal of International Business Studies,*** 27: 1005-1032.

Axelrod, R. 1984. **The evolution of cooperation.** New York: Basic Books.

Bagozzi, R.P. 1993. Assessing construct validity in personality research: Applications to measures of self-esteem. ***Journal of Research and Personality,*** 27: 49-87.

Bagozzi, R.P. & Yi, Y. 1990. Assessing method variance in multitrait-multimethod matrices: The case of self-reported affect and perceptions at work. ***Journal of Applied Psychology,*** 75: 547-560.

Balakrishnan, S & Koza, M. 1993. Information asymmetry, adverse selection and Joint Ventures: Theory and evidence. ***Journal of Economic Behavior and Organization***, 20: 99-107.

Balasubramanyam, V.N. 2003. India: Trade policy review. ***The World Economy,*** 26 (9): 1357-1368.

Barnes, J.H. 1984. Cognitive biases and their impact on strategic planning. ***Strategic Management Journal,*** 5 (2): 129-137.

Barney, J.B., & Hansen, M.H. 1994. Trustworthiness as a source of competitive advantage. ***Strategic Management Journal,*** 15: 175-190.

Baum, J.A.C., Calabrese, T., & Silverman, B.S. 2000. Don't go it alone: Alliance networks and startups' performance in Canadian biotechnology. ***Strategic Management Journal,*** 21: 267-294.

Bazerman, M. 1998. Judgement in Managerial Decision Making. New York: Wiley.

Beamish, P.W., & Banks, J.C. 1987. Equity joint ventures and the theory of the multinational enterprise. ***Journal of International Business Studies,*** 18 (2): 1-16.

Bell, G. G., Oppenheimer, R. J. & Bastien, A. 2002. Trust Deterioration in an International Buyer-Supplier Relationship. ***Journal of Business Ethics,*** 36(1/2): 65-78.

Bergh, D.D., & Lawless, M.W. 1998. Portfolio restructuring and limits to hierarchical governance: The effects of environmental uncertainty and diversification strategy. ***Organization Science,*** 9 (1): 87-102.

Bhaumik, S.K., Beena, P.L., Bhandari, L.P., & Gokarn, S. 2003. ***Survey of FDI in India.*** Working paper no. 6, London Business School, Centre for New and Emerging Markets, London.

Bies, R. J. & Tripp, T. M. 1996. Beyond Distrust: "Getting Even" and the Need for Revenge. In R. M. Kramer & T. R. Tyler (Eds.), ***Trust in organizations: frontiers of theory and research:*** 246-260. Thousand Oaks, CA: Sage Publications.

Bleeke, J., Ernst, D. 1993. ***Collaborating to Compete.*** New York: John Wiley.

Bower, J. L. 1986. ***Managing the resource allocation process.*** Boston, MA: Harvard Business School Press.

Bowonder, B. & Richardson, P.K. 2000. Liberalization and the growth of business-led R&D: The case of India. ***R&D Management,*** 30 (4): 279-288.

Brockner, J., Phyllis, A.S., Daly, J.P., Tyler, T., & Martin, C. 1997. When trust matters: The moderating effect of outcome favorability. ***Administrative Science Quarterly,***42 (3): 558-583.

Bradach, J.L., & Eccles, R.G. 1989. Price, authority and trust: From ideal types to plural forms. ***Annual Review of Sociology,*** 15: 97-118.

Bresman, H., Birkinshaw, J., & Nobel, R. 1999. Knowledge transfer in international

acquisitions. ***Journal of International Business Studies,*** 30: 439-462.

Buchko, A. A. 1994. Conceptualization and measurement of environmental uncertainty: An assessment of Miles and Snow perceived environmental uncertainty scale. ***Academy of Management Journal,*** 37 (2): 410-425.

Buckley, P.J., & Glaister, K.W. 2002. What do we know about international joint ventures? In F. Contractor & P. Lorange (Eds.), ***Cooperative strategies and alliances:*** 49-69. Amsterdam, NL: Pergamon.

Burgelman, R. A. 1983. A Process Model of Internal Corporate Venturing in the Diversified Major Firm. ***Administrative Science Quarterly,*** 28(2): 223-244.

Cameron, K.S., & Kim, M.U., Whetten, D.A. 1987. Organizational effects of decline and turbulence. ***Administrative Science Quarterly,*** 32: 222-240.

Campbell, D.T., & Fiske, D.W. 1959. Convergent and discriminant validation by the multitrait-multimethod matrix. ***Psychological Bulletin,*** 56: 81-105.

Carson, S.J., Madhok, A., Varman, R., & John, G. 2003. Information processing moderators of the effectiveness of trust-based governance in inter-firm R&D collaboration. ***Organization Science,*** 14(1): 45-56.

Child, J. 1972. Organizational structure, environment and performance: The role of strategic choice. ***Sociology,*** 6: 2-21.

Cohen, W.M. & Levinthal, D.A. 1990. Absorptive capacity: A new perspective on learning and innovation. ***Administrative Science Quarterly,*** 35 (1): 128-152.

Currall, S.C. & Inkpen, A. C. 2002. A multilevel approach to trust in joint ventures. ***Journal of International Business Studies,*** 33 (3): 479-496.

Cyert, R.M., & March, J.G. 1963. ***A Behavioral Theory of the Firm.*** NJ: Prentice-Hall.

Daft, R. L. 1998. ***Organization Theory and Design***. Cincinnati, OH: South-Western College Publishing.

Dalton, Dan R., Catherine M. Daily, S. Trevis Certo, & Rungpen Roengpitya. 2003. Meta-Analyses of Financial performance and Equity: Fusion or Confusion? ***Academy of Management Journal,*** 46 (1): 13-26.

Das, T. K & Teng, B. 1998. Between trust and control: Developing confidence in partner cooperation in alliances. ***Academy of Management Review***, 23(3): 491-512.

Das, T.K. & Teng, B.S. 2000. Instabilities of strategic alliances: An internal tensions perspective. ***Organization Science,*** 11 (1): 77-101.

Deeds, D.L. & Rothaermel, F.T. 2003. Honeymoons and liabilities: The relationship between age and performance in research and development alliances. ***The Journal of Product Innovation Management,*** 20 (6): 468-484.

Delacroix, J., & Swaminathan, A. 1991. Cosmetic, speculative and adaptive organizational change in the wine industry: A longitudinal study. ***Administrative Science Quarterly,*** 36: 631-661.

Delios, A., & Henisz, W.J. 2003. Political hazards, experience, and sequential entry strategies: The international expansion of Japanese firms, 1980-1998. ***Strategic Management Journal,*** 24 (11): 1153-1164.

Dess, G.G. & Beard, D.W. 1984. Dimensions of organizational task environments. ***Administrative Science Quarterly,*** 29 (1): 52-73.

DeVellis, R.F. 1991. ***Scale development***. Newbury Park, CA: Sage Publications.

Dillman, D.A. 2000**.** ***Mail and internet surveys: The tailored design method.*** New York: Wiley.

Doz, Y.L. 1996. The evolution of co-operation in strategic alliances: initial conditions or learning processes**.** ***Strategic Management Journal,*** 17: 55-83.

Dyer, J. H., Singh, H. 1998. The relational view: cooperative strategy and sources of interorganizational competitive advantage. ***Academy of Management Review,*** 23 (4): 660-679.

Dyer, J.H. & Chu, W. 2000. The determinants of trust in supplier-automaker relationships in the U.S., Japan, and Korea. ***Journal of International Business Studies****,* 31 (2) 259-285.

Dyer, J.H., & Chu, W. 2003. The role of trustworthiness in reducing transaction costs and improving performance: Empirical evidence from the United States, Japan, and Korea. ***Organization Science,*** 14 (1): 57-68.

Edelman, L. B. 1990. Legal Environment and Organizational Governance: The Expansion of Due Process in the American Workplace. ***American Journal of Sociology***, 95(6): 1401-1440.

Ferrin, D.L., & Dirks, K.T. 2003. The use of rewards to increase and decrease trust: Mediating processes and differential effects. ***Organization Science,*** 14 (1): 18-31.

Floyd, S. W. & Lane, P. J. 2000. Strategizing throughout the organization: Managing role conflict in strategic renewal. ***Academy of Management Review,*** 25(1): 154-177.

Galbraith, J.R. 1977. ***Organization design.*** Reading, MA: Addison-Wesley.

Gambetta, D. 1988. ***Trust: the making and breaking of cooperative relationships.*** Oxford: Basil Blackwell.

Geringer, J.M., & Hebert, L. 1991. Measuring performance of international joint ventures. ***Journal of International Business Studies,*** 22: 249-264.

Geyskens, I., Steenkamp, J.B.E.M., & Kumar, N. 1998. Generalizations about trust in marketing channel relationships using meta-analysis. ***International Journal of Research in Marketing,*** 15 (3): 223-248.

Ghemawat, P., Porter, M.E., & Rawlinson, R.A. 1986. In M.E. Porter (Ed.), ***Competition in Global Industries,*** Boston, MA: Harvard Business School Press.

Ghoshal, S., & Moran, P. 1996. Bad for practice: A critique of the transaction cost theory. ***Academy of Management Review***, 21(1): 13-47.

Gimeno, J. 2004. Competition within and between Networks: The Contingent Effect of Competitive Embeddedness on Alliance Formation. ***Academy of Management Journal***, 47(6): 820-842.

Glick, W.H., Ogilvie, dt., & Miller, C.C. 1990. ***Assessing Dimensions of Task Environments: Intra-industry and Aggregate Industry Measures.*** Paper presented at the Academy of Management Annual Meeting.

Greene, W.H. 1997. ***Econometric Analysis.*** Upper Saddle River, NJ: Prentice-Hall.

Grindley, P., Mowery, D.C., & Silverman, B.S. 1994. SEMATECH and collaborative research: Lessons in the design of high-technology consortia. ***Journal of Policy Analysis and Management,*** 13: 723-758.

Gulati, R. 1995. Does familiarity breed trust? The implications of repeated ties for contractual choice in alliances. ***Academy of Management Journal,*** 38: 85-112.

Gulati, R. 1998. Alliances and networks. ***Strategic Management Journal,***19 (4): 293-317.

Gulati, R., & Singh, H. 1998. The architecture of cooperation: managing coordination costs and appropriation concerns in strategic alliances. ***Administrative Science Quarterly,*** 43: 781-814.

Gulati, R. & Gargiulo, M. 1999. Where do Interorganizational Networks Come from? ***American Journal of Sociology,*** 104(4): 1439-1493.

Gupta, A.K., & Govindarajan, V. 1991. Knowledge flows and the structure of control within multinational corporations. ***Academy of Management Review,*** 16: 768-

Hambrick, D.C. 1982. Environmental scanning and organizational strategy. ***Strategic Management Journal,*** 3 (2): 159-174.

Hamel, G. 1991. Competition for competence and inter-partner learning within international strategic alliances. ***Strategic Management Journal,*** 12: 83-103.

Hamilton, B.H., & Nickerson, J.A. 2003. Correcting for endogeneity in strategic management research. ***Strategic Organization,*** 1(1): 51-78.

Harman, H.H. 1967. ***Modern Factor Analysis.*** Chicago: University of Chicago Press.

Harrigan, K.R. 1985. ***Strategies for Joint Ventures.*** Lexington, MA: Lexington Books.

Harrigan. K.R. 1988. Joint ventures and competitive strategy. ***Strategic Management Journal,*** 9: 141-158.

Hatfield, L., & Pearce, J.A. 1994. Goal achievement and satisfaction of joint venture partners. ***Journal of Business Venturing,*** 9: 423-449.

Heckman, J. 1979. Sample selection bias as a specification error. ***Econometrica,*** 47: 153-161.

Hegdes, Larry V. & Ingram Olkin. 1985. ***Statistical methods for meta-analysis,*** San Diego: Academic Press.

Hennart, J.F. 1988. A transactions cost theory of joint ventures. ***Strategic Management Journal,*** 9 (4): 361-374.

Hennart, J. F. 1991. The transaction costs theory of joint ventures: an empirical study of japanese subsidiaries in the United States. ***Management Science,*** 37 (4): 483-

Hennart, J.F., Kim, D.J., & Zeng, M. 1998. The impact of joint venture status on the longevity of Japanese stakes in U.S. manufacturing affiliates. ***Organization Science,*** 9(3): 382-395.

Hennart, J.F., Roehl, T., & Zietlow, D.S. 1999. 'Trojan horse' or 'workhorse'? the evolution of US-Japanese joint ventures in the United States. ***Strategic Management Journal,*** 20 (1): 15-30.

Hennart, J. F., Reddy, S. B. 2000. Digestibility and asymmetric information in the choice between acquisitions and joint ventures: where's the beef? ***Strategic Management Journal,*** 21 (2): 191-194.

Hennart, J. F. & Zeng, M. 2002. Cross-cultural differences and joint venture longevity. ***Journal of International Business Studies,*** 33 (4): 699-716.

Hennart, J.F., & Zeng, M. 2005. Structural determinants of joint venture performance. ***European Management Review,*** 2 (2): 105-116

Heide, J. B., & Miner, A. S. 1992. The shadow of the future: Effects of anticipated interaction and frequency of contact on buyer-seller cooperation. ***Academy of Management Journal,*** 35: 265-291.

Hildebrandt, L. 1987. Consumer retail satisfaction in rural areas: A reanalysis of survey data. ***Journal of Economic Psychology,*** 8: 19-42.

Hofstede, G. 1980. ***Culture's Consequences: International differences in work-related values***. London: Sage.

Huber, J.P., Miller, C.C., & Glick, W.H. 1990. Developing more encompassing theories about organizations: The centralization-effectiveness relationship as an example. ***Organization Science,*** 1 (1): 11-40.

Huffcutt, A. I., Arthur, W. 1995. Development of a new outlier statistic for meta-analytic data. ***Journal of Applied Psychology,*** 80 (2): 327-333.

Hunter, J.E., & Schmidt, F.L. 1990. ***Methods of meta-analysis.*** Sage: Newbury Park, CA.

Inkpen, A. C. & Currall, S. C. 1997. International joint venture trust. An Empirical Examination. In P.W. Beamish & J.P. Kiling (Eds.), ***Cooperative Strategies. North American Perspectives*****:** 308-334. San Francisco, CA: The New Lexington Press.

Inkpen, A.C. & Currall, S.C. 2004. The co-evolution of trust, control and learning in Joint ventures. ***Organization Science,*** 15 (5): 586-599.

Inkpen, A.C. & Dinur, A. 1998. Knowledge management processes and international joint ventures. ***Organization Science,*** 9 (4): 454-468.

Ireland, R.D., Hitt, M. A., Vaidyanath, D. 2000. Alliance management as a source of competitive advantage. ***Journal of Management,*** 28 (3): 413-446.

Isobe, T., Makino, S., & Montgomery, D.B. 2000. Resource commitment, entry timing and market performance of foreign direct investments in emerging economies: The case of Japanese international joint ventures in China. ***Academy of Management Journal,*** 43(3): 468-484.

Jehn, K.A., Northcraft, G.B., Neale, M.A. 1999. Why differences make difference: A field study of diversity, conflict, and performance in workgroups.***Administrative Science Quarterly,*** 44: 741-763.

Johnson, J.L., Cullen, J.B., Sakano, T., Takenouchi, H. 1996. Setting the stage for trust and strategic integration in Japanese-US cooperative alliances. ***Journal of International Business Studies,*** 27 (5): 981-1004.

Joreskog, K.G. 1971.Statistical analysis of congeneric tests. ***Psychometrika,*** 36: 109-133.

Joreskog, K.G., & Sorbom, D. 1996. ***LISREL 8: User's reference guide***. Chicago: Scientific Software International.

Kahneman, D., & Lovallo, D. 1993. Timid choices and bold forecasts: A cognitive perspective on risk taking. ***Management Science,*** 39 (1): 17-31.

Kale, P., Singh, H., & Perlmutter, H. 2000. Learning and protection of proprietary assets in strategic alliances: Building relational capital. ***Strategic Management Journal,*** 21: 217-237.

Keats, B.W., & Hitt, M.A. 1988. A causal model of linkages among environmental dimensions, macro organizational characteristics and performance. ***Academy of Management Journal,*** 31: 570-598.

Khanna, T., Gulati, R., & Nohria, N. 1998. The dynamics of learning alliances: Competition, cooperation, and relative scope. ***Strategic Management Journal,*** 19: 193-210.

Kim, W.C. & Mauborgne, R. 1998. Procedural justice, strategic decision making and the knowledge economy. ***Strategic Management Journal,*** 19: 323-338.

Kim, P. H., Ferrin, D. L., Cooper, C. D, & Dirks, K. T. 2004. Removing the Shadow of Suspicion: The Effects of Apology Versus Denial for Repairing Competence- Versus Integrity-Based Trust Violations. ***Journal of Applied Psychology,*** 89(1): 104-118.

Kogut, B. 1988. Joint ventures: Theoretical and empirical perspectives. ***Strategic Management Journal,*** 9: 319-332.

Kogut, B. 1989. The stability of joint ventures: Reciprocity and competitive rivalry. ***The Journal of Industrial Economics,*** 38 (2): 183-198.

Kogut, B., & Singh, H. 1988. The effect of national culture on the choice of entry mode. ***Journal of International Business Studies,*** 19: 411-432.

Kotabe, M., Martin, X., & Domoto, H. 2003. Gaining from vertical partnerships: knowledge transfer, relationship duration, and supplier performance improvement in the U.S. and Japanese automotive industries. ***Strategic Management Journal,*** 24 (4): 293-316.

Koopmans, T.C. 1957. ***Three Essays on the State of Economic Science.*** New York: McGraw-Hill.

Kumar, S., & Seth, A. 1998. The design of co-ordination and control mechanisms for managing joint venture parent relationships. ***Strategic Management Journal,*** 19: 579-599.

Lane, P.J., Salk, J.E., & Lyles, M.A. 2001. Absorptive capacity, learning and performance in international joint ventures. ***Strategic Management Journal,*** 22: 1139-1161.

Langfred, C.W. 2004. Too much of a good thing? Negative effects of high trust and individual autonomy in self-managing teams. ***Academy of Management Journal,*** 47 (3): 385-399.

Larson, A. 1992. Network dyads in entrepreneurial settings: A study of the governance of exchange relationships. ***Administrative Science Quarterly,*** 37: 76-104.

Lau, C.M., & Woodman, R.W. 1995. Understanding organizational change: A schematic perspective. ***Academy of Management Journal,*** 38 (2): 537-554.

Lawrence, P.R., & Lorsch, J.W. 1967.***Organization and Environment.*** Cambridge, MA: Harvard University Press.

Lee, T. W., Mitchell, T.R., Wise, L., & Fireman, S. An unfolding model of voluntary employee turnover. ***Academy of Management Journal,*** 39 (1): 5-36.

Lewicki, R. J. & Bunker, B. B. 1996. Developing and maintaining trust in work relationships. In R. M. Kramer & T. R. Tyler (Eds.), ***Trust in organizations: frontiers of theory and research:*** 115-139. Thousand Oaks, CA: Sage Publications.

Lewicki, R. J., McAllister, D. J. & Bies, R. J. 1998. Trust and distrust: New relationships and realities. ***Academy of Management Review***, 23(3): 438-458.

Lewis, J. D. & Weigert, A. 1985. Trust as a Social Reality. ***Social Forces,*** 63(4): 967-985.

Lin, X., & Germain, R. 1998. Sustaining satisfactory joint venture relationships: The role of conflict resolution strategy. ***Journal of International Business Studies,*** 29: 179-196.

Lindell, M.K., & Whitney, D.J. 2001. Accounting for common method variance in cross-sectional designs. ***Journal of Applied Psychology,*** 86: 114-121.

Lorenz, E.H. 1988. Neither friends nor strangers: Informal networks of subcontracting in French industry. In D. Gambetta (Ed.), ***Trust: Making and Breaking Cooperative Relations,*** Oxford: Basil Blackwell.

Lui, S.S., & Ngo, H.Y. 2004. The role of trust and contractual safeguards on cooperation in non-equity alliances. ***Journal of Management,*** 30 (4): 471-485.

Luo, Y. 1997. Partner selection and venturing success: The case of Joint Ventures with firms in the people's republic of China. ***Organization Science,*** 8 (6): 648-662.

Luo, Y. 2001. Antecedents and consequences of personal attachment in cross-cultural cooperative ventures. Administrative Science Quarterly, 46 (2): 177-201.

Luo, Y. 2002. Product diversification in international joint ventures: Performance implications in an emerging market. ***Strategic Management Journal,*** 23: 1-20.

Lyles, M. A., Salk, J. E. 1996. Knowledge acquisition from foreign parents in international joint ventures: An empirical examination in the Hungarian context. ***Journal of International Business Studies,*** 27 (5): 877-904.

Macaulay, S. 1963. Non-contractual relations in business: A preliminary study. ***American Sociological Review,*** 28: 55-67.

Macneil, I.R. 1980. ***The New Scoial Contract: An Inquiry into Modern Contractual Relations***. New Haven: Yale University Press.

Madhok, A., & Tallman, S.B. 1998. Resources, transactions and rents: Managing value through interfirm collaborative relationships. ***Organization Science,*** 9 (3): 326-339.

Makino, S. & Inkpen, A. C. 2003. Knowledge Seeking FDI and Learning across Borders. In M. Easterby-Smith & M. A. Lyles (Eds.), ***The Blackwell Handbook of Organizational Learning and Knowledge Management:*** 233-252. Oxford: Blackwell Publishers.

Martijn, C., Spears, R., Van der Pligt, J, & Jakobs, E. 1992. Negativity and positivity effects in person perception and inference: Ability versus morality. ***European Journal of Social Psychology***, 22(5): 453-463.

Martin, X., Swaminathan, A., & Mitchell, W.1998. Organizational evolution in the interorganizational environment: Incentives and constraints on international expansion strategy. ***Administrative Science Quarterly,*** 43 (3): 566-601.

Martin, X., & Salomon, R. 2003. Tacitness, learning, and international expansion: A study of foreign direct investment in a knowledge-intensive industry. ***Organization Science,*** 14 (3): 297-311.

Mayer, R. C., Davis, J. H., Schoorman, F.D. 1995. An integrative model of organizational trust. ***The Academy of Management Review,*** 20 (3): 709-734.

McArthur, L. A. 1972. The how and what of why: Some determinants and consequences of causal attribution. ***Journal of Personality and Social Psychology***, 22(2): 171-193.

McEvily,B., Perrone,V., & Zaheer, A. 2003. Trust as an organizing principle. ***Organization*** Science, 14 (1): 91-103.

Mintzberg, H. 1978. Patterns in strategy formation. ***Management Science,*** 24 (9): 934-948.

Mohr, J., & Spekman, R. 1994. Characteristics of partnership success: Partnership attributes, communication behavior and conflict resolution techniques. ***Strategic Management Journal,*** 15: 135-152.

Mowery, D.C., Oxley, J.E., & Silverman, B.S. 1996. Strategic alliances and interfirm knowledge transfer. ***Strategic Management Journal,*** 17: 77-91.

Noorderhaven, N.G. 2004. Hermeneutic methodology and international business research. Forthcoming in R. Marschan-Piekkari & C. Welch (Eds.), ***Handbook of Qualitative Research Methods for International Business*****,** Cheltenham, UK and Northampton, MA: Edward Elgar.

Noorderhaven, N.G. 1996. Opportunism and trust in transaction cost economics. In John Groenewegen (Eds), ***Transaction cost economics and beyond.*** 105-128. Boston, MA: Kluwer Academic.

Nooteboom, B., Berger, H. & Noorderhaven, N. G. 1997. Effects of trust and governance on relational risk. ***Academy of Management Journal***, 40(2): 308-338.

Nooteboom, B. 2002. ***Trust. Forms, Foundations, Functions, Failures and Figures.*** Cheltenham, UK and Northampton, MA: Edward Elgar.

Nunnally, J.1978. ***Psychometric theory.*** New York: McGraw-Hill.

Ohbuichi, K., Kameda, M. & Agarie, N. 1989. Apology as aggression Control: Its Role in Mediating Appraisal of and Response to Harm. ***Journal of Psychology and Social Psychology,*** 56(2): 219-227.

Olk, P. 2002. Evaluating strategic alliance performance. In F. Contractor & P. Lorange (Eds.), ***Cooperative strategies and alliances:*** 119-143. Amsterdam, NL: Pergamon.

Osborn, R.N., & Baughn, C.C. 1990. Forms of interorganizational governance for multinational alliances. ***Academy of Management Journal,*** 33 (3): 503-519.

Oxley, J.E. 1997. Appropriability hazards and governance in strategic alliances: A transaction cost approach. ***Journal of Law Economics and Organization,*** 13: 387-409.

Oxley, J. E. 1999. Institutional environment and the mechanisms of governance: the impact of intellectual property protection on the structure of inter-firm alliances. ***Journal of Economic Behavior and Organization,*** 38: 283-309.

Oxley, J.E., Sampson, R.C. 2004. The scope and governance of international R&D alliances. ***Strategic Management Journal,*** 25: 723-750.

Park, C.V., & Sheath, J.N. 1975. Impact of prior familiarity and cognitive complexity on information processing rules. In M.L. Ray & S. Ward (Eds.), ***Communicating with consumers: The information processing approach:*** 71-78. Beverly Hills, CA: Sage.

Park, S.H., Russo, M. 1996. When competition eclipses cooperation: An event history analysis of alliance failure. ***Management Science,*** 42: 875-890.

Park, S.H. & Ungson, G.R. 2001. Interfirm Rivalry and Managerial Complexity: A conceptual framework of alliance failure. ***Organization Science,*** 12 (1): 37-53.

Parkhe, A. 1991. Interfirm diversity, organizational learning, and longevity in global strategic alliances. ***Journal of International Business Studies,*** 22: 579-601.

Parkhe, A. 1993a. "Messy" research , methodological predispositions, and theory development in international joint ventures. ***Academy of Management Review,*** 18: 227-268.

Parkhe, A.1993b. Strategic alliance structuring: A game theoretic and transaction cost examination of interfirm cooperation. ***Academy of Management Journal,*** 36: 794-829.

Parkhe, A. 1998. Building trust in international alliances. ***Journal of World Business,*** 33 (4): 417-437.

Perrone, V., Zaheer, A. & McEvily, B. 2003. Free to Be Trusted? Organizational Constraints on Trust in Boundary Spanners. ***Organization Science,*** 14(4): 422-439.

Pfeffer, J., & Nowak, P. 1976. Joint ventures and interorganizational interdependence. ***Administrative Science Quarterly,*** 21 (3): 398-419.

Pisano, G.P. 1989. Using equity participation to support exchange: Evidence from the biotechnology industry. ***Journal of Law Economics and Organization,*** 5: 109-126.

Podsakoff, P.M., MacKenzie, S.B., Lee, J.Y., & Podsakoff, N.P. 2003. Common method biases in behavioral research: A critical review of the literature and recommended remedies. ***Journal of Applied Psychology,*** 88 (5): 879-903.

Poppo, L., & Zenger, T. 2002. Do formal contracts and relational governance function as substitutes or complements? ***Strategic Management Journal*****,** 23(8): 707-726.

Pothukuchi, V., Damanpour, F., Choi, J., Chen, C.C., & Park, S.H. 2002. National and organizational culture differences and international joint venture performance. ***Journal of International Business Studies.*** 33(2): 243-265.

Powell, W.W. 1990. Neither market nor hierarchy: Network forms of organizations. ***Research in Organizational Behavior,*** 12: 295-336.

Ring, P.S. & Van de Ven, A.H. 1994. Developmental processes of cooperative

interorganizational relationships. ***Academy of Management Review,*** 19: 90-118.

Ring, P.S. 1996. Fragile trust and resilient trust and their roles in cooperative interorganizational relationships***. Business & Society,*** 35: 148-175.

Robertson, R.D. 1980. Small group decision making: The uncertain role of information in reducing uncertainty. ***Political Behavior,*** 2 (2): 163-188.

Robins, J.A., Tallman, S., & Lindquist, K.F. 2002. Autonomy and dependence of international cooperative ventures: An exploration of the strategic performance of U.S. ventures in Mexico. ***Strategic Management Journal*****,** 23: 881-901.

Rousseau, D.M., Sitkin, S.B., Burt, R.S., Camerer, C. 1998. Not so different after all: A cross disciplinary view of trust. ***Academy of Management Review,*** 23 (3): 393-404.

Sako, M. 1991. The role of "trust" in Japanese buyer-supplier relationships. ***Ricerche Economiche,*** 45: 449-474.

Sako, M., & Helper, S. 1998. Determinants of trust in supplier relations: Evidence from the automotive industry in Japan and the United States. ***Journal of Economic Behavior & Organization,*** 34: 387-417.

Salk, J. E. & Simonin, B. L. 2003. Beyond Alliances: Towards a Meta-Theory of Collaborative Learning. In M. Easterby-Smith & M. A. Lyles (Eds.), ***The Blackwell Handbook of Organizational Learning and Knowledge Management***: 253-277. Oxford: Blackwell Publishers.

Sampson, R.C. 2004. The cost of misaligned governance in R&D alliances. ***Journal of Law, Economics and Organization,*** 20 (2): 484-526.

Sarkar, M., Cavusgil, S. T. & Evirgen, C. 1997. A commitment-trust mediated framework of international collaborative venture performance. In P.W. Beamish & J.P. Kiling (Eds.), ***Cooperative Strategies. North American Perspectives*****:** 255-285. San Francisco, CA: The New Lexington Press.

Sarkar, M.B., Echambadi, R., Cavusgil, S.T., Aulakh, P. S. 2001. The influence of complementarity, compatibility, and relationship capital on alliance performance. ***Journal of the Academy of Marketing Science,*** 29 (4): 358-373.

Saxton, T. 1997. The effects of partner and relationship characteristics on alliance outcomes. ***Academy of Management Journal,*** 40 (2): 443-460.

Schlenker, B. R. & Darby, B. W. 1981. The Use of Apologies in Social Predicaments. ***Social Psychology Quarterly***, 44(3): 271-278.

Schuler, R. S., Rogovsky, N. 1998. Understanding compensation practice variations across firms: The impact of national culture. ***Journal of International Business Studies,*** 29 (1): 159-178.

Schwenk, C.R. 1984. Cognitive simplification processes in strategic decision-making. ***Strategic Management Journal,*** 5 (2): 111-128.

Shapiro, S. P. 1987. The Social Control of Impersonal Trust. ***American Journal of Sociology***, 93(3): 623-658

Shaver, J. M. 1998. Accounting for endogeneity when assessing strategy performance: Does entry mode choice affect FDI survival? ***Management Science,*** 44 (4): 571-585.

Simons, T., Pelled, L.H., & Smith, K.A. 1999. Making use of difference: Diversity, debate and decision comprehensiveness in top management teams. ***Academy of Management Journal,*** 42: 662-673.

Simonin, B.L. 1999. Ambiguity and the process of knowledge transfer in strategic alliances. ***Strategic Management Journal,*** 20: 595-624.

Sitkin, S. B.& Stickel, D. 1996. The Road to hell. The Dynamics of Distrust in an Era of Quality. In R. M. Kramer & T. R. Tyler (Eds.), ***Trust in organizations: frontiers of theory and research:*** 196-215. Thousand Oaks, CA: Sage Publications.

Sitkin, S. B. & Bies, R. J. 1993. Social accounts in conflict situations: Using explanations to manage conflict. ***Human Relations***, 46(3): 349-370.

Sitkin, S. B. & Roth, N. L. 1993. Explaining the limited effectiveness of legalistic "remedies" for trust / distrust. ***Organization Science***, 4(3): 367-392.

Snyder, N.H., & Glueck, W.F. 1982. Can environmental volatility be measured objectively? ***Academy of Management Journal,*** 25 (1): 185-192.

Steensma, H.K., & Corley, K.G. 2000. On the performance of technology-sourcing partnerships: the interaction between partner interdependence and technology attributes. ***Academy of Management Journal,*** 43 (6): 1045-1067.

Steensma, H.K. & Lyles, M.A. 2000. Explaining IJV survival in a transitional economy through social exchange and knowledge-based perspectives. ***Strategic Management Journal,*** 21: 831-851.

Steensma, H.K., Tihanyi, L., Lyles, M.A., Dhanaraj, C. 2005. The evolving value of foreign partnerships in transitioning economies. ***Academy of Management Journal,*** 48 (2): 213-235.

Stinchcombe, A.L. 1985. Contracts as hierarchical documents. In A. Stinchcombe & C. Heimer

(Eds.), ***Organization theory and project management:*** Bergen, Norway: Norwegian University Press.

Sutcliffe, K.M. & Zaheer, A. 1998. Uncertainty in the transaction environment: An empirical test. ***Strategic Management Journal,*** 19 (1): 1-23.

Szulanski, G., Cappetta, R. & Jensen, R.J. 2004. When and how trustworthiness matters: Knowledge transfer and the moderating effect of causal ambiguity. ***Organization Science,*** 15 (5): 600-613.

Thompson, J.D. 1967. ***Organizations in Action: Social Science Bases of Administration.*** New York: McGraw-Hill.

Tihanyi, L., Griffith, D. A., & Russell, C. J. 2005. The effect of cultural distance on entry mode choice, international diversification, and MNE performance: a meta-analysis. ***Journal of International Business Studies,*** 36 (3): 270-283.

Tourangeau, R., Rips, L. J., & Rasinski, K. 2000. ***The psychology of survey response.*** Cambridge, UK: Cambridge University Press.

Tsai, W. & Ghoshal, S. 1998. Social capital and the value creation: the role of intrafirm networks. ***Academy of Management Journal,*** 41(4): 464-476.

Uzzi, B. 1997. Social structure and competition in interfirm networks: The paradox of embeddedness. ***Administrative Science Quarterly,*** 42 (1): 35-67.

Van Maanen, J. & Schein, E. H. 1979. Toward a theory of organizational socialization. In B. M. Staw (Ed.), ***Research in organizational behavior*****:** 209-264. Greenwich, CT: JAI Press Inc.

Webb,G. 1996.Trust and crises. In R.M.Kramer, T.R.Tyler (Eds.), ***Trust in Organizations: Frontiers of Theory and Research.*** Thousand Oaks, CA: Sage.

Weiss, A. M., & Kurland, N. 1997. Holding distribution channel relationships together: the role of transaction-specific assets and length of prior relationship. ***Organization Science,*** 8 (6): 612-623.

Wholey, D.R., & Brittain, J. 1989. Characterizing environmental variation. ***Academy of Management Journal,*** 32 (4): 867-882.

Widaman, K.F. 1985. Hierarchically tested covariance structure models for multitrait-multimethod data. ***Applied Psychological Measurement,*** 9: 1-26.

Williamson, O.E. 1985. ***The Economic Institutions of Capitalism.*** New York: Free Press.

Williamson,O.E. 1991. Comparative economic organization: The analysis of discrete structural alternatives. ***Administrative Science Quarterly,*** 36: 269-296.

Williamson, O.E. 1999. Strategy research: Governance and competence perspectives. ***Strategic Management Journal,*** 20(12): 1087-1108.

Yan, A. & Gray, B. 1994. Bargaining power, management control, and performance in United States-China joint ventures: A comparative case study. ***Academy of Management Journal,*** 37 (6): 1478-1517.

Yan, A., & Zeng, Z. 1999. International joint venture instability: A critique of previous research, a reconceptualization, and directions for future research. ***Journal of International Business Studies,*** 30: 397-414.

Zand, D.E. 1972. Trust and managerial problem solving. ***Administrative Science Quarterly,*** 17 (2): 229-239.

Zaheer, A., McEvily, B., & Perrone,V. 1998. Does trust matter? Exploring the effects of interorganizational and interpersonal trust on performance. ***Organization Science,*** 9(2): 141-159.

Zaheer, A., Lofstrom, S. & George, V. 2002. Interpersonal and Interorganizational Trust in Alliances. In F. J. Contractor & P. Lorange (Eds.), ***Cooperative Strategies and alliances:*** 347-377. Elsevier Science Ltd.

Zaheer, A. & Venkatraman, N. 1995. Relational governance as an interorganizational strategy: an empirical test of the role of trust in economic exchange. ***Strategic Management Journal***, 16: 373-392.

Zollo, M., Reuer, J.J., & Singh, H. 2002. Inter-organizational routines and performance in strategic alliances. ***Organization Science,*** 13(6): 701-713.

Zucker, L. G. 1977. The role of institutionalization in cultural persistence. ***American Sociological Review,*** 42(5): 726-743.

Zucker, L. G. 1986. Production of trust: Institutional Sources of economic structure 1840-1920. In B. M. Staw & L. L. Cummings (Eds.), ***Research in organizational behavior***, 8: 53-111. Greenwich, CT: JAI Press.